Installation Guide

Allegro Network Multimeter Virtual Edition

Allegro Packets Network Multimeter

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1. Important Information before Installation

The Allegro Virtual Edition is designed for 2 use cases. It can analyze pcap captures of unlimited sizes for forensic investigation or live traffic from virtual machines by a virtual Mirror Port or ERSPAN.

Be aware that an activated ring buffer can degrade the IO performance for all VMs. It is recommended to use one or many dedicated HDDs or SSDs for the ring buffer to prevent side effects to other VMs.

2. System Requirements

2.1 Hypervisor

The Allegro Virtual Edition supports all Virtualization Hypervisors that support 64bit x86 Linux virtualization. Allegro has tested the solution on:

- VMWare ESXi 6.7.0 or newer
- VMWare workstation (Windows, Linux)
- VMWare Fusion (Mac)
- VirtualBox (Windows, Linux, Mac)
- KVM (Linux)

This installation guide will focus on VMWare ESXi.

2.2 System Requirement of the Virtual Machine:

- x86 64bit Intel/AMD CPU with SSE4.2 support (since 2011)
- 4 CPU-Cores
- at least 2GB RAM for the In-Memory-DB, the more the better
- 20 GB free Disk space

3. Installation

3.1 Download VM Image

Download the newest VM image as a zip file from:

https://support.allegro-packets.com/multimeter/vm-images/

User: multimeter Password: Ezb3hab6UmIS

Extract the zip archive. It should contain the 3 files 'allegro-multimeter.ovf', 'allegro-multimeter.vmdk' and 'allegro-multimeter-virtualbox.ovf'.

3.2 OVF Deployment to VMWare ESXi

Log in to VMWare ESXi.

User name	
Password	vmware esxi

Once you have logged in, navigate to 'Virtual Machines'.

vmware [,] esxi ^{**}									
Bandar Ravigator		🚯 demo-esxi.allegro - Virtual Mac	hines						
✓ ☐ Host Manage		😭 Create / Register VM 🛛 📑	Console	Power on	Power off	Suspe	end CRefre	sh 🛟 Act	ions
Monitor		Virtual machine	8	Status 😒	Used space	~	Guest OS	8	Tools inst \sim
🛛 🚰 Virtual Machines	3						No virtual r	machines	
El Storage General Actions	1 2	Quick filters		~					

Create a new VM with 'Create / Register VM' and select the option 'Deploy a virtual machine from an OVF or OVA file'.

1 New virtual machine		
 New virtual machine Select creation type Select OVF and VMDK files Select storage License agreements Deployment options Additional settings Ready to complete 	Select creation type How would you like to create a Virtual Machine? Create a new virtual machine Deploy a virtual machine from an OVF or OVA file Register an existing virtual machine	This option guides you through the process of creating a virtual machine from an OVF and VMDK files.
vm ware		Back Next Finish Cancel

Press 'Next', use a preferred name for the Allegro and drag/drop the 2 files into the window and press 'Next'.



Select your data storage for the Allegro Virtual Edition. This storage will be used as the boot partition and to store the configuration of the Allegro Virtual Edition and does not require a high-speed disk. It will not store the packet ring buffer.

🔁 New virtual machine - Allegro Virtua	al Edition										
 1 Select creation type 2 Select VF and VMDK files 3 Select storage 4 License agreements 5 Deployment options 6 Additional settings 7 Ready to complete 	Select storage Select the storage type and datastore Standard Persistent Memory Select a datastore for the virtual mach	ne's c	configuration file	es	and all of i	ts' v	rirtual disks	i.			
	Name	~	Capacity ~		Free	~	Туре	~	Thin pro ~	Access	~
	ualasiure i		52 00		40.51 0.5		VMI 30		Supported	1 iten	าร
vm ware											
						Ba	×	Nex	t Finis	h C	ance

The Deployment options allow you to select the network mapping for the MGT port and the disk provisioning.

1 New virtual machine - Allegro Virtual Edition							
 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 	Deployment options Select deployment options						
4 Deployment options 5 Ready to complete	Network mappings	Network portgroup2 ~					
	Disk provisioning	O Thin O Thick					
	Power on automatically	٥					
vm ware							
		Back Next Finish Cancel					

Please double-check all options in the next dialogue box and press Finish if everything is fine.

😚 New virtual machine - Allegro Virtual Edition							
 ✓ 1 Select creation type ✓ 2 Select OVF and VMDK files ✓ 3 Select storage 	Ready to complete Review your settings selection before fini	shing the wizard					
4 Deployment options 5 Ready to complete	Product VM Name	Allegro Network Multimeter Allegro Virtual Edition					
	Disks	allegro-multimeter.vmdk					
	Datastore	datastore1					
	Provisioning type	Thin					
	Network mappings	Network: portgroup2					
	Guest OS Name	Unknown					
vm ware [.]	Do not refresh your brown	ser while this VM is being deployed.					
		Back Next Finish Cancel					

The upload and the import of the Allegro Virtual Edition will start. Please be patient until it is completed.

🛐 Recent tasks									
Task ~	Target ~	Initiator ~	Queued	~ s	Started ~	Result 🔺 🗸 🗸	Completed v	~	
Upload disk - allegro-multimeter.vmdk (1 of 1)	S Allegro Virtual Edition	root	05/08/2019 11:43:34	05	05/08/2019 11:43:34		Running 52 %		
Import VApp	Resources	root	05/08/2019 11:43:26	05	05/08/2019 11:43:26		Running 52 %		

3.3 OVF Deployment to VirtualBox

Start VirtualBox and select from the menu 'File' \rightarrow 'Import Appliance'.



In the next dialogue box click on the directory button, navigate to the extracted zip archive and choose 'allegro-multimeter-virtualbox.ovf'. Click on 'Next'. A dialogue box with the virtual appliance settings will open.

	?	×
Import Virtual Appliance		
Appliance settings		
These are the virtual machines cont You can change many of the proper below.	ained in the appliance and the suggested settings of the imported VirtualBox ma ties shown by double-clicking on the items and disable others using the check be	achines. oxes
Virtual System 1		
😽 Name	Allegro Network Multimeter	
Description	Allegro Virtual Edition	
🗮 Guest OS Type	🔯 Linux 2.6 / 3.x / 4.x (64-bit)	
🔲 СРИ	4	
RAM	2048 MB	
🄗 USB Controller		
🗗 Network Adapter	Intel PRO/1000 MT Server (82545EM)	
Network Adapter	Intel PRO/1000 MT Server (82545EM)	
✓ ♦ Storage Controller (IDE)	PIIX4	
Virtual Disk Image	allegro-multimeter.vmdk	
🔷 Storage Controller (IDE)	PIIX4	
Base Folder	C:\Users\Admin\VirtualBox VMs	
🔂 Primary Group	/	
You can modify the base folder whice machine) modified.	h will host all the virtual machines. Home folders can also be individually (per vir	tual
C:\Users\Admin\VirtualBox VMs		~
MAC Address Policy: Include only N	AT network adapter MAC addresses	•
Additional Options: 🗹 Import hard	d drives as VDI	
Appliance is not signed		
	Restore Defaults Import C	ancel

Check the location of the virtual machine files. When finished click on 'Import'.

Now select the new virtual machine 'Allegro Network Multimeter'. Click on 'Settings' and select 'Network'. The Allegro Network Multimeter VirtualBox settings define by default two bridged network adapters. One of them is used as the MGMT interface, the other is used as the measurement port. Make sure that for adapters 1 and 2, the correct name of the host network adapter is selected (e.g. for Windows: 'Realtek PCIe GBE Family Controller').

Oracle VM VirtualBox Manager File Machine Help Tools		×
Allegro Network Multimeter	 Allegro Network Mu General System Display Storage Audio Network Serial Ports USB Shared Folders User Interface 	Itimeter - Settings Adapter 1 Adapter 2 Adapter 3 Adapter 4 Image: Realtek PCLe GBE Family Controller Image: Realtek PCLe GBE Family Controller
		Invalid settings detected 📶 OK Cancel
		None

4. Install USB License Dongle

If the Allegro Virtual Edition is shipped with an USB License dongle, plug the dongle into an unused USB port of the VM host. The dongle must be connected to the virtual machine.

4.1 Vmware ESXi

When powered off, press 'Edit' in the Vmware ESXi host and click on 'Add other device'. Choose 'USB device'. A new entry at the bottom of the hardware list appears. Select 'Feitian HID Dongle' or similar.

🔁 Edit settings - Allegro Virtual Edition (ESXI 6.0 virtual machine)	
Virtual Hardware VM Options		
🔜 Add hard disk 🛛 🎫 Add network ada	apter 🗧 Add other device	
> 🖬 CPU	4 ~ ()	
Memory	8192 MB ~	
▶ 🚍 Hard disk 1	3.7252902: GB 🗸	\otimes
▶ 🔜 Hard disk 2	8 GB ~	\otimes
USB controller 1	USB 2.0	~ 🛛
Network Adapter 1	VM Network	✓ 🗹 Connect 🛞
Network Adapter 2	VM Network	✓ 🗹 Connect 🛞
▶ 🛄 Video Card	Specify custom settings	~
ED New USB device	Feitian HID Dongle	~ 🛛
		Save Cancel

4.2 VirtualBox

In the settings dialogue box please click on 'USB' and use the second button on the right to add an USB device. Select 'OEM HID Dongle' from the list.

😣 Allegro Network N	ultimeter - Settings	?	×
General	USB		
System	Enable USB Controller		
Display	USB 1.1 (OHCI) Controller USB 2.0 (EHCI) Controller		
Storage	USB 3.0 (xHCI) Controller		
🕩 Audio	USB Device Filters		
Network			
Serial Ports			
彦 USB			
Shared Folders			ø
User Interface			
	ОК	Car	ncel

5. Powering on the Virtual Machine

Power on the virtual machine when the import has been successfully completed. The Allegro Virtual Edition will boot, prepare the installation and reboot once.

The VM will seek an IP Address via DHCP on the MGT port. Please check the console output for an assigned IP address.

Allegro Virtual Edition
Allegro Network Multimeter (2.3.0-501-g81f67e9) on allegro-mm-60d1
2019-05-08 09:52:05 +0000
management interfaces
ethernet (connected)
ipv4 address 10.54.0.220/24
ірv4 gateway 10.54.0.254
ipv4 dns 10.54.0.254
ipv6 address fe80::20c:29ff:fe82:5888/64
ePlease connect with http to the IP address.
$_{ m e}^{ m If$ DNS resolution works, https://allegro-мм-60d1/ shall work.
For DHCP Server mode (default for WIFI), use https://allegro/
Press Shift+R for configuration reset and an automatic firmware update. Make sure the Multimeter has access to the Internet via management interface.
Press Shift+S for a static IP on ethernet interface. This setting will not be saved and is valid only until power-off.

You can now connect now to the IP address with your browser, in our case https://10.54.0.220/. The browser will show a certificate warning. Accept it to move to the login screen.

🗧 🔍 🗧 📓 Allegro Packets Network	Multin × +	
← → C ▲ Nicht sicher htt	ps://10.54.0.220/login/	☆ 🖸 🔍 🔣 🗄
Alle	gro Packets Network Multimeter	
Usern	ame Username	
Passv	Password	
	Login	

Use as credentials as user 'admin' and password 'allegro'.

6. License

If the Allegro Virtual Edition was shipped with an USB License dongle and was properly installed, the License is installed and the Allegro should work fine.

The serial number of the Allegro Virtual Edition would be e.g. 'dongle: 1234567890' and is displayed in the serial number box under 'Settings' \rightarrow 'License upload'. If it is not shown there although the dongle has been installed properly, please contact Allegro Packets support.

If the Allegro Virtual Edition was not shipped with an USB License dongle, follow the following steps. In the web interface a warning is shown that the Allegro Virtual Edition does not yet have a license.

License
No license. Please install a license or connect a USB license dongle. The Allegro Network Multimeter will not process traffic.
Ok

Navigate to 'Settings' \rightarrow 'License upload' and send the system serial number to

testlicense@allegro-packets.com.

Allegro Packets will issue a test License that can be installed by the 'Upload new License button'.

Once the test License is applied, it will show the License details similar to this output:

License	details
---------	---------

License State	valid
Bandwidth	unlimited
Memory	1024 GB
1G interfaces	1
License Expiration	2019-06-01

The VM is now ready to process pcap files.

7. Pcap Processing

To process pcap files navigate to 'Generic' \rightarrow 'Pcap analysis'

PCAP analysis

? Manual

The pcap processing mode allows to upload and analyze a pcap file instead of the ethernet ports. It uses the timestamps of the packets in the pcap file instead of the current time. The pcap file will not be stored on disk. If selected in the analyze pcap dialog, packets of the pcap file will be stored in the packet ringbuffer.

	Select or drop file	
Analyze pcap		
Status		

Drop a pcap file onto the web page and press 'Analyze pcap'. The Allegro VM will process this pcap in real-time when it is uploaded to the VM.

You can begin browsing the pcap immediately after setup.

8. Setup Storage for the Packet Ring Buffer

By default, the Allegro Virtual Edition does not capture the packets to the ring buffer and does not allow the extraction of pcap files.

WARNING: Since the ring buffer can cause high disk loads when recording packets to disk, it is recommended to use dedicated HDDs or SSDs for the ring buffer, even when attached by USB3. If the ring buffer is used on the same disk as other critical processes such as disk i/o a database, the Allegro Virtual Edition can reduce the disk performance.

You need to power off the Allegro in order to attach a new HDD.

8.1 Vmware ESXi

When powered off, press 'Edit' in the Vmware ESXi host and add a new HDD.

F 🔲 CPU	4 ~	4 ~ (1)			
Memory	2048	MB ~			
Hard disk 1	3.7252902!	GB ~		8	
Hard disk 2	8	GB ~		8	
USB controller 1	USB 2.0		~	Ø	
Network Adapter 1	VM Network		Connect	Ø	
Video Card	Specify cust	om settings	~		

8.2 VirtualBox

For adding external data storage to the packet ring buffer, please go to the 'Storage' page. Add e.g. a virtual SATA controller and a hard disk attached to it. Choose either an existing one or create a new one.



9. Advanced Configuration

9.1 Management Interface Configuration

You can configure the management interfaces by accessing the web interface at 'Settings' \rightarrow 'Management interfaces'. The available options are described in the online manual which can be accessed via the web interface.

9.2 Configuration Reset and Firmware Update

The **Configuration Reset** restores the configuration to the factory settings.

- Web interface: Go to menu 'Settings' → 'Administration' and click on 'Reset system configuration'. All settings including the network configuration will be reset to factory default.
- 2. Boot menu: Follow the instruction in the section Factory Reset.
- 3. Keyboard: Attach a keyboard to a USB port, a monitor to one of the HDMI ports and press 'Shift+R'. After the successful reset and update, the Allegro Network Multimeter will switch off. Otherwise, it will stay powered on. Check for error messages on the monitor.

9.3 Firmware Update Notification

Update information via email

With each release, Allegro Packets will send you an email with release notes and a link to download the update. If you want to be added to this mailing list, please send an email with your Allegro serial number ('Info' \rightarrow 'System Info' \rightarrow 'System ID') to **support@allegro-packets.com** and the subject 'Release'.

Using the Allegro web interface

Start your Allegro and click 'Settings' on the left side of the menu and then 'Firmware updates'. Click on 'Check for new firmware' and the Allegro will tell you if a new version is available for download. If so, you can choose to download it directly to the device. In addition, this page provides an overview of all versions available. To start the new version, click on 'Activate'.

9.4 Factory Reset

The Factory reset will clear the entire system installation and restore the firmware to the version that was originally shipped with the Allegro Network Multimeter.

- Power on the Allegro Virtual Edition.
- After initialization a boot menu appears. Select 'Factory reset' and press Enter or select. 'Configuration reset' to reset the configuration settings only while keeping the current firmware installation.
- The Allegro Virtual Edition will boot, reset everything to Factory settings, and reboot again.
- The Allegro Virtual Edition is now reset to Factory settings.

10. Manual

The device manual can be accessed from the web interface. Each web section contains a button to access context-specific documentation, the complete manual can be opened by clicking on the 'Manual' link in the menu.

Getting help: Please send an email to support@allegro-packets.com or call +49 341 59 16 43 54