

User Manual

Installation BAT-Controller Virtual The naming of copyrighted trademarks in this manual, even when not specially indicated, should not be taken to mean that these names may be considered as free in the sense of the trademark and tradename protection law and hence that they may be freely used by anyone.

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About this manual

The document "User Manual Installation" contains the following information for the BAT-Controller Virtual:

- Installation
- Initial setup
- Registration and activation
- Reset

For more information on the full user documentation: See "User Documentation" on page 33.

Key

The symbols used in this manual have the following meanings:

Listing
Work step
Subheading

1 Description

1.1 General description

The Hirschmann BAT-Controller Virtual is a software-based Controller that runs on a hypervisor. Virtualization allows you to customize the BAT-Controller Virtual exactly for your needs. As it operates the HiLCOS operating system, it offers the same features as a hardware-based Hirschmann BAT-Controller and it offers considerable flexibility.

The BAT-Controller Virtual operates either on a VMware ESXi server (See "Installation on the VMware ESXi server" on page 8.) or a Microsoft Hyper-V (See "Installation on a Microsoft Hyper-V" on page 15.).

1.2 BAT-Controller Virtual files

The following files are available for the BAT-Controller Virtual:

 OVA file Basic package for deploying a BAT-Controller Virtual in VMware ESXi
 VHDX file

Virtual disk image for deploying a BAT-Controller Virtual in Microsoft Hyper-V

UPX file

File for updating the software of existing BAT-Controller Virtual installations

2 Starting operation

2.1 Installation on the VMware ESXi server

2.1.1 **Prerequisites**

- ▶ The BAT-Controller Virtual is available as an OVA file
- VMware ESXi 6.0.0 or higher is running on a server with the Intel Xeon processor with the AES extended instruction set (AES-NI) and hardware virtualization (VT-x)

2.1.2 System requirements

- CPU:
 - BAT-Controller Virtual 100: 1 virtual x86 CPU
 - BAT-Controller Virtual 200: 1 virtual x86 CPU
 - BAT-Controller Virtual 1000: 2-3 virtual x86 CPUs For the operation of a BAT-Controller Virtual 1000 a high CPU clock rate is recommended
- Hard disk memory: 512 MB
- Working memory:
 - BAT-Controller Virtual 100: 1024 MB RAM
 - BAT-Controller Virtual 200: 1024 MB RAM
 - BAT-Controller Virtual 1000: 3072 MB RAM

2.1.3 Step-by-step instructions

□ Launch VMware ESXi, log in, and create a new virtual machine.

 Host Manage Monitor Virtual Machines Storage 	Navigator	🗇 🗗 localho	ost.test - Virtual M	achines			
Monitor Virtual Machines 7 > Storage 1 Virtual Machines 7 Virtual Mac	▼ Host Manage	🔁 Cre	eate / Register VM	Console	Power on	Power off	II Su
Virtual Machines 7 Storage 1	Monitor	O V	irtual machine	Create or register a	virtual machine	~	Status
▶ Storage	🕨 🚑 Virtual Machines	7				A	
	Storage						
▶ 9 Networking 4	Setworking	4					

□ For Creation type, select Deploy a virtual machine from an OVF or OVA file.



□ Enter a name for the virtual machine and select the ova file for the BAT-Controller Virtual.

 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 4 License agreements 5 Deployment options 6 Additional settings 7 Ready to complete 	Select OVF and VMDK files Select the OVF and VMDK files or OVA for the VM you would like to deploy Enter a name for the virtual machine. vDevice Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.
vm ware [*]	× Hirschmann_BAT-Controller_Virtual_10.32_INSTALL.ova
	Back Next Finish Cancel

Note: The name you enter here is the name of the BAT-Controller Virtual on the ESXi server and is not necessarily the name of the BAT-Controller Virtual in LANconfig.

 $\hfill\square$ Select the location where the virtual machine is stored.

✓ 1 Select creation type	Select storage									
 2 Select OVF and VMDK files 	Select the datastore in which to store th	e config	guration and	d dis	k files.					
✓ 3 Select storage										
4 License agreements	The following datastores are accessible	from th	e destinatio	n res	source that you	selected. S	elect	the destination	datastore	for
5 Deployment options	the virtual machine configuration files ar	nd all of	the virtual of	disks	s.					
7 Ready to complete	Name	~	Capacity	~	Free ~	Туре	~	Thin pro \sim	Access	~
	datastore1		924 GB		807.61 GB	VMFS5		Supported	Single	
									1 iten	ns
vm ware										
					Bac		Vext	Finish	Can	cel

 $\hfill\square$ Read the license agreements and agree to them.

 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 4 License agreements 5 Deployment options 	License agreements Read and accept the license agreements Licensing agreement
7 Ready to complete	Company Copyright (c) All Rights Reserved
vm ware	By installing, loading or using the Software, you are consenting to be bound by this agreement. If you do not agree to all of the terms of this agreement, do not download or install this Software.
	Back Next Finish Cancel

□ Assign at least 1 network to the BAT-Controller Virtual. You can add more networks later in the properties of the virtual machine as you require. For **Disc provisioning**, select **Thin**.

 ✓ 1 Select creation type ✓ 2 Select OVF and VMDK files ✓ 3 Select storage 	Deployment options Select deployment options						
 4 License agreements 5 Deployment options 6 Additional settings 	Network mappings	Ethernet1 Ethernet2	Internal vDev Outbound	ice		•	
7 Ready to complete	Disk provisioning	⊙ Thin ⊖ T	Thick				
vm ware							
				Back	Next	Finish	Cancel

□ (Optional) Here you specify some basic settings required for deploying the BAT-Controller Virtual:

- Device name of the BAT-Controller Virtual for its identification in LANconfig.
- The IPv4 address of the BAT-Controller Virtual and the corresponding netmask (ETH-1 / LAN-1), separated by a space.
- The URL to a script file (.lcs), which can contain additional configuration parameters for the BAT-Controller Virtual (TFTP or HTTP).

 ✓ 1 Select creation type ✓ 2 Select OVF and VMDK files ✓ 3 Select storage 	Additional settings Additional properties for the VM				
 ✓ 3 Select storage ✓ 4 License agreements ✓ 5 Deployment options 					
6 Additional settings 7 Ready to complete	Device Name Intranet IP Address and Netmask				0
	Config Script URL				6
vm ware [®]					
		Back	Next	Finish	Cancel

$\hfill\square$ Complete the creation of the virtual machine.

 ✓ 1 Select creation type ✓ 2 Select OVF and VMDK files ✓ 3 Select storage 	Ready to complete Review your settings selection before fir	hishing the wizard						
 ✓ 4 License agreements ✓ 5 Deployment options 	Product	BAT-Controller Virtual 1000						
 ✓ 6 Additional settings 	VM Name	vDevice						
✓ 7 Ready to complete	Disks	vDevice-installer-10.20.0060-disk	l.vmdk					
	Datastore	datastore1						
	Provisioning type	Thin						
vm ware [*]	Network mappings	Ethernet1: Internal Test-vRouter,Ethernet2: Outbound						
	Guest OS Name	Unknown						
	Do not refresh your brow	rser while this VM is being deployed.						
		Ba	k Next	Finish	Cancel			

□ After the Installation Wizard has finished, the BAT-Controller Virtual is ready for use. If the network assigned to Ethernet-1 contains a DHCP server, or if an IP address was assigned during the configuration, the BAT-Controller Virtual can be accessed and configured over this network.



Note: After installation, the BAT-Controller Virtual is unlicensed. The data throughput for the LAN ports is therefore limited to 100 KBit/s.

- □ To remove this limitation, the first step following the installation is to activate the license (See "Registration and activation" on page 29.). After that, you can take further steps such as performing a firmware update.
- After that, you can take further steps such as performing a firmware update.

2.2 Installation on a Microsoft Hyper-V

2.2.1 Prerequisites

- The BAT-Controller Virtual is available as a VHDX file
- Microsoft Hyper-V is running on a server with the Intel Xeon processor with the AES extended instruction set (AES-NI) and hardware virtualization (VT-x)
- Microsoft Hyper-V is supported based on Microsoft Windows Server 2016, Microsoft Windows Server 2019 and Microsoft Windows 10

2.2.2 System requirements

- CPU:
 - BAT-Controller Virtual 100: 1 virtual x86 CPU
 - ▶ BAT-Controller Virtual 200: 1 virtual x86 CPU
 - BAT-Controller Virtual 1000: 2-3 virtual x86 CPUs For the operation of a BAT-Controller Virtual 1000 a high CPU clock rate is recommended
- Hard disk memory: 512 MB
- Working memory:
 - BAT-Controller Virtual 100: 1024 MB RAM
 - BAT-Controller Virtual 200: 1024 MB RAM
 - BAT-Controller Virtual 1000: 3072 MB RAM

2.2.3 Step-by-step instructions

- □ Start the Hyper-V Manager.
- □ Create a new virtual machine (**Action > New > Virtual Machine**) and follow the instructions of the wizard. Important points for the BAT-Controller Virtual are listed below.
- \Box Give the virtual machine a name.

👮 New Virtual Machine Wizar	rd	×
💴 Specify Nam	e and Location	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Summary	Choose a name and location for this virtual machine. The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easi identify this virtual machine, such as the name of the guest operating system or workload. Name: vDevice You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server. Store the virtual machine in a different location Location: C:\ProgramData\Microsoft\Windows\Hyper-V\ Browse If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.	iy
	< Previous Next > Finish Cancel	

□ Select **Generation 1**.

💆 New Virtual Machine Wizar	d	×
💴 Specify Gene	eration Window Spin	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	 Choose the generation of this virtual machine. (e) Generation 1 This virtual machine generation supports 32-bit and 64-bit guest operating systems and provides virtual hardware which has been available in all previous versions of Hyper-V. (c) Generation 2 This virtual machine generation provides support for newer virtualization features, has UEFI-base firmware, and requires a supported 64-bit guest operating system. (c) Once a virtual machine has been created, you cannot change its generation. More about virtual machine generation support	ed
	< Previous Next > Finish Cancel	

 Assign the working memory in the Assign Memory dialog according to the requirements of your BAT-Controller Virtual. See "System requirements" on page 15. \Box Connect the network to a virtual switch you configured previously.

🖳 New Virtual Machine Wiza	rd X
💴 Configure N	etworking
Before You Begin Specify Name and Location Specify Generation Assign Memory	Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected. Connection: Standardswitch
Configure Networking Connect Virtual Hard Disk Summary	
	< Previous Next > Finish Cancel

□ Connect the virtual hard disk of the BAT-Controller Virtual. Select the *.vhdx file you received from Hirschmann. If necessary, copy this to the desired location beforehand.

Note: Note that the BAT-Controller Virtual makes use of this virtual disk after the installation.

👮 New Virtual Machine Wiza	rd	×
📒 Connect Virt	tual Hard Disk	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Summary	A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties. C Create a virtual hard disk Use this option to create a VHDX dynamically expanding virtual hard disk. Name: vDevice.vhdx Location: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks\ Size: 127 GB (Maximum: 64 TB)	
	Ise an existing virtual hard disk Use this option to attach an existing virtual hard disk, either VHD or VHDX format. Location: C:\Users\Public\Documents\Hyper-\V\Virtual Hard Disks\wDevic Browse Attach a virtual hard disk later Use this option to skip this step now and attach an existing virtual hard disk later.]
	< Previous Next > Finish Cancel	

 $\hfill\square$ Complete the installation in the **Summary** dialog.

□ If applicable, go to the settings under **Add hardware** and add up to 5 more network adapters.



\Box Select the virtual machine.

Hyper-V Manager						-		×
File Action View Help								
🗢 🏟 🙎 📰 🛛 🖬								
Hyper-V Manager	Virtual Machines	Actions						
DENECTLI0959	Name	State	CPU Usage Assigned M					•
	vDevice	Off			vDevice 🔺			•
					📲 Connect			
					Settings			
					o Start			_
	٢	🔂 Checkpoint			_			
	Checkpoints				📑 Move			
	The selected virtual machine has no checkpointe				Export			
	The selected vindal machine has no checkpoints.			Rename				
						Delete		
					I Help			

\Box Click Start.

Hyper-V Manager	Virtual Machines		Actions		
	Name	State	CPU Usage	DENEC1LT0959	
	vDevice	Off	g c cougo	, and generative	vDevice
					Settings
					(b) Start
					R Checkpoint
	Charlester				Move
	Спескроіпть		Export.		
		The selected	E Bename		
			L Delete		
					Z Help
					The p

□ Click **Connect**.

📲 Hyper-V Manager					- 🗆 ×
File Action View Help					
Hyper-V Manager	Virtual Machines		Actions		
DENECTE10939	Name	State	CPU Usage	DENEC1LT0959	
	vDevice	Running	5 5		vDevice
					Connect
			Settings		
					Turn Off
	<				Shut Down
	Checkpoints				😃 Save
					Pause
	Now				I> Reset
					🔂 Checkpoint
					> Revert
					Move
					Export

The BAT-Controller Virtual will now boot from the connected hard drive and complete the installation of the virtual machine. This can take up to 10 minutes.



Note: After installation, the BAT-Controller Virtual is unlicensed. The data throughput for the LAN ports is therefore limited to 100 KBit/s.

- □ To remove this limitation, the first step following the installation is to activate the license (See "Registration and activation" on page 29.). After that, you can take further steps such as performing a firmware update.
- □ After that, you can take further steps such as performing a firmware update.

3 Initial setup

The BAT-Controller Virtual can be configured via the local area network (LAN). Make sure that the computer you are using for the configuration is on the same LAN as the BAT-Controller Virtual. If a DHCP server is active on the same LAN, the BAT-Controller Virtual is automatically given an IP address where it can be reached (and found in LANconfig). If the BAT-Controller Virtual was installed with an IP address, this can be used to access the device.

The following options are available for the initial setup:

 LANconfig See "Configuration with LANconfig" on page 25.
 WEBconfig

See "Configuration with WEBconfig" on page 27.

3.1 Configuration with LANconfig

LANconfig is part of LANtools, the free Hirschmann software package. LANconfig has a wide range of applications, from the user-friendly commissioning of a single device with various Installation Wizards, to the holistic management of several devices.

You can download the LANconfig software from the Hirschmann product pages (www.hirschmann.com).

3.1.1 Basic Settings

After starting, LANconfig automatically searches the local network for new devices and adds them to the overview.

In the overview, you can open a context menu with a right-click on the device. This context menu provides you the possibility to configure the device or to start a Setup Wizard.

 \Box Start the Setup Wizard.

If the device has not yet been configured (for example during the deployment on the ESXi server or Hyper-V server), a basic setup wizard starts automatically for the configuration of basic parameters (such as the main device password and IP address).

🚰 LANconfig		Configure	Ctrl+0	
File Edit Device Gr	oup View	Setup Wizard	Ctrl+W	
ZZ Z 😨 🥏	🗸 🖌 [Quick Rollback	Ctrl+Q	
🔄 🔄 LANconfig	Name	Check	Ctrl+F5	Device Status
Messen	Cal Messen	Configuration Management	+	
Testnetz 🔋 Testne		Firmware Management	+	
	✓ \	WEBconfig / Console Session	+	06 Ok
		Monitor Device		
		Monitor Device Temporarily	Ctrl+M	
		Monitor WLAN Device		
		Monitor WLAN Device Temporarily		
		Create Trace Output		
		Set Date/Time		
		Activate Software Option		
	•	Activate Configuration Synchronization Settings		۱.
Date Time	Name	Add to Wireless ePaper Server		*

Note: The main device password is essential for resetting the BAT-Controller Virtual.

□ After running the basic Setup Wizard, you can continue with the configuration either with another Wizard or manually.

3.1.2 Internet connection

Setting up an Internet connection is easily done with a Setup Wizard.

□ Start the Setup Wizard from the context menu in LANconfig and follow the instructions of the Setup Wizard.

Note: Make sure that the Ethernet port you use for the Internet connection is NOT connected to the LAN that is used to manage the BAT-Controller Virtual.

3.2 Configuration with WEBconfig

WEBconfig is the web-based configuration interface of HiLCOS.

- □ To start the configuration in WEBconfig, open a web browser.
- □ Type in the IP address assigned during the installation into the address bar of your web browser.

3.2.1 Basic Settings

If the device has not yet been configured (for example during the deployment on the ESXi server or Hyper-V server), a basic setup wizard starts automatically for the configuration of basic parameters (such as the main device password and IP address).

192.168.60.206 - Basic settings							
♦ ★ https://192.168.60.206/DEFAULT?CONFSID=aa29afac4f6b6892bcf3454c72bf196e4bf							
192.168.60.206 - Basic settings							
<u>Step 1 of 8</u>							
Device name	vDevice	(max. 64 characters)					
The device name is a helpful identification attribute, particularly if you manage multiple devices of the same type. Otherwise the device name will remain the standard name.							
P	revious Page <u>N</u> ext > <u>R</u> eset	Terminate this Wizard					

Note: The main device password is essential for resetting the BAT-Controller Virtual.

□ After running the basic Setup Wizard, you can continue with the configuration either with another Wizard or manually.

3.2.2 Internet connection

Setting up an Internet connection is easily done with a Setup Wizard. □ Start the Setup Wizard using the WEBconfig menu item **Setup Wizards**.

Note: Make sure that the Ethernet port you use for the Internet connection is NOT connected to the LAN that is used to manage the BAT-Controller Virtual.

4 Registration and activation

The functional scope of the BAT-Controller Virtual is determined by the license used to activate it. The license sets out framework conditions such as:

- Maximum number of VPN tunnels
- Maximum data throughput
- Maximum number of ARF networks

A BAT-Controller Virtual without an activated license is limited to a data throughput of 100 KBit/s.

4.1 **Registration using LANconfig**

To register the BAT-Controller Virtual using LANconfig, proceed as follows:

- $\hfill\square$ Open the context menu right-clicking on the device.
- □ Open the Activate license dialog.

□ Enter the purchased license key and click the **Register license** button. Your web browser will then redirect you to the Hirschmann website to carry out the registration.

Activate lic	cense	? X
Register	r	
0	Before a license can be used it must be registered online. Thereby you will obtain a license file for the selected devi	ce.
	Register a license online to get a license file	
	License <u>k</u> ey:	
	Register License	
	Need a demo licence? For certain options a demo lice be get online for testing purpo	<u>nse can</u> se.
Activate	e	
9	A license file is already present	
- C/	License file:	
	Brow	wse
	This file is valid only for a certain device. You cannot u file for other devices.	ise this
	Attention: The device might reboot to enable the licer the file is correct. In that case any connection will be temporary interrupted!	ise if
	OK	Cancel

 \Box After you have entered the information, you can download the license file.

4.2 Activation using LANconfig

- To activate the license, proceed as follows:
- □ Drag & drop the downloaded license file onto the frame next to the **Browse** button or use the **Browse** button to navigate to where the license file is stored.
- □ Use the **OK** button to upload the license file to the BAT-Controller Virtual and complete the registration.

Note: Deleting the BAT-Controller Virtual from the ESXi server or Hyper-V server also deletes the activated license.

5 Reset

If you want to reconfigure the BAT-Controller Virtual irrespective of any settings you have made, you can reset the BAT-Controller Virtual to its default settings without affecting the license. You can perform the reset in the following ways:

- Reset via the Command Line Interface (CLI)
- Reset via the Command Line Interface (CLI) while retaining certificates and the main device password

5.1 Reset via the Command Line Interface (CLI)

- □ Open the CLI for the BAT-Controller Virtual on the ESXi server or Hyper-V server, or connect to the BAT-Controller Virtual via an SSH connection.
- Once you have logged on, you perform the reset with the do /other/ reset command. If a main password has been set for the device, this is will be requested before the command is executed. After resetting, the BAT-Controller Virtual boots.

Note: Resetting the BAT-Controller Virtual deletes all of the configuration settings, passwords and certificates.

5.2 Reset via the Command Line Interface (CLI) while retaining certificates and the main device password

In order to retain the main password and any uploaded certificates on the BAT-Controller Virtual, you can execute a command using the command line interface of the BAT-Controller Virtual.

- □ Open the CLI for the BAT-Controller Virtual on the ESXi server or Hyper-V server, or connect to the BAT-Controller Virtual via a SSH connection.
- □ Once you have logged on, you perform the reset with the default -r command.

Note: The default -r command resets all of the configuration items in the current directory and its subdirectories to the default values. Certificates and the main device password in theBAT-Controller Virtual remain unchanged.

6 User Documentation

The full user documentation for the BAT-Controller Virtual consists of the following documents:

- User Manual Installation
- HiLCOS User Manual Configuration Guide
- HiLCOS Reference Manual CLI

You find the documents as PDF files for downloading on the Internet at: https://www.doc.hirschmann.com

A Further support

Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at http:// www.hirschmann.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at https:// hirschmann-support.belden.com.

This site also includes a free of charge knowledge base and a software download section.

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