BackBox© E5.01 Virtual Installation Guide

Abstract

This Virtual Installation Guide document is for BackBox© E5.01

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Legal Notice

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Introduction

This guide documents the preparation of the virtual Windows server(s) who will act as a Virtual Tape Controller for BackBox iSCSI environment. The virtual BackBox will only work with a virtual Nonstop system.

Virtual Machine Requirements

The following minimum specifications are required to install and use a Virtual BackBox (vBB).

	Atto Fiber card in passthrough mode is supported only with VMware ESXi. In this case, vBackBox must remain attached to this ESXi hypervisor host.

- 2 Cores (or 2 Core per physical Atto port assigned to the VM)
- 8 Gb of memory (add extra 4 Gb for each Atto port assigned to the VM up to 32 Gb)
- 250 Gb Hard Drive
- 2, 10 Gb Ethernet card (one for iSCSI and one to access the storage)
- Windows Server Standard 2022, 2019 or 2016.

BackBox Software

Get the latest released software version package and upload it to the newly created virtual machine.

	The package for the virtual machine contains the same folders as for the regular BackBox.

	Upload the binary file (ex: BBE) and the macro text file INSE in a sub-volume different from the current BackBox sub-volume.

Folder Installation Package Latest Released Version	Content
AttoCelerityFC-20250721	Latest (required) AttoCelerity version, if necessary
ETINET Driver Installer v3.1.5	BackBox VTC driver
GUARDIAN-E05.01-01SEP2025	Latest BackBox Guardian Software
ServerScripts-20251008	PowerShell installation scripts required for upgrade or new installation
UI-E05.01.14	Installer for the BackBox Client
VTC-E05.01.28	Installer for the VTC Application

Fiber Channel (FC) Type	ATTO Driver Version
FC-8	2.130.4001.6000
FC-16 FC-32 FC-64	2.100.4001.6000

TCP/IP Connection

Connect the TCP/IP cable to the appropriate Network adapter and configure TCP/IP according to the following Guidelines:

GUIDELINES

- Assign a fixed TCP/IP address (do not use DHCP to obtain the address) according to customer's specification.
- Make sure that the IP routing allows communications between the VTC and the Nonstop server, between the VTC and the operator/installer workstation.
- Make sure the server is registered into the DNS or the Host file, if you plan to use the host name to reach the VTC.
- Virtual Nonstop must have a second adapter configured on a storage CLIM. This adapter must be able to reach the public LAN on which the vBB is installed.
- If ATTO Fiber HBA will be used in passthrough mode, you must configure the ESXi passthrough and assign physical port to the VM. Install the Atto driver prior to running PowerShell VTCServerPreparation.ps1 script. Refer to Atto HBA Target Mode in VMWare ESXi Passthrough Mode section for more details.

PowerShell Execution Policy

- While logged as local administrator, start a PowerShell command window and type the following command to allow script execution:

```
Set-ExecutionPolicy -ExecutionPolicy RemoteSigned -Scope
LocalMachine
```

- Answer Yes [Y]
- Ensure the policy is in force:

```
Get-ExecutionPolicy –List

Scope                ExecutionPolicy -----
MachinePolicy        Undefined
UserPolicy           Undefined
Process              Undefined
CurrentUser          Undefined
LocalMachine         RemoteSigned
```

Install Additional Roles and Features

Keep all default roles and features enabled by the Windows Server Standard edition (Desktop experience or Core installation) used for the operating system installation.

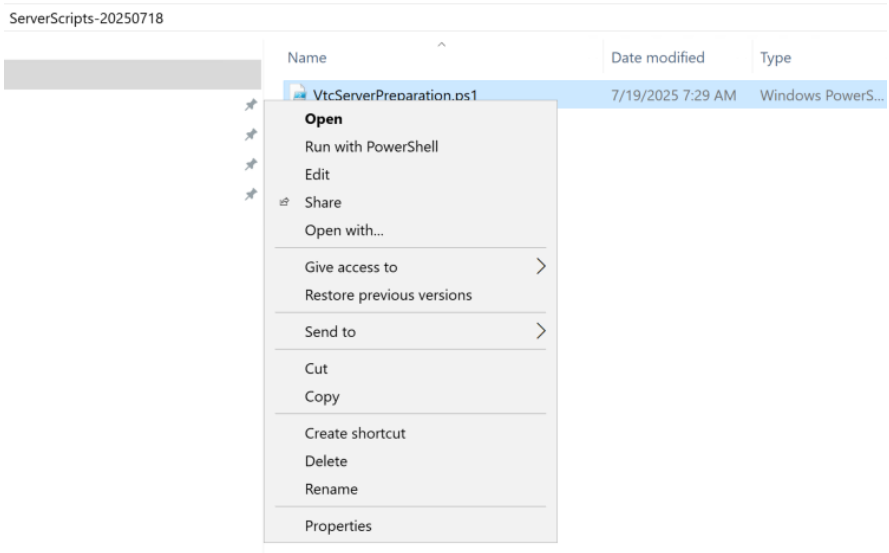
- The BackBox software requires an additional feature called Message Queuing Server (MSMQ-Server), that is automatically installed by the VTCServerPreparation PowerShell script (in case it hasn't been already installed).

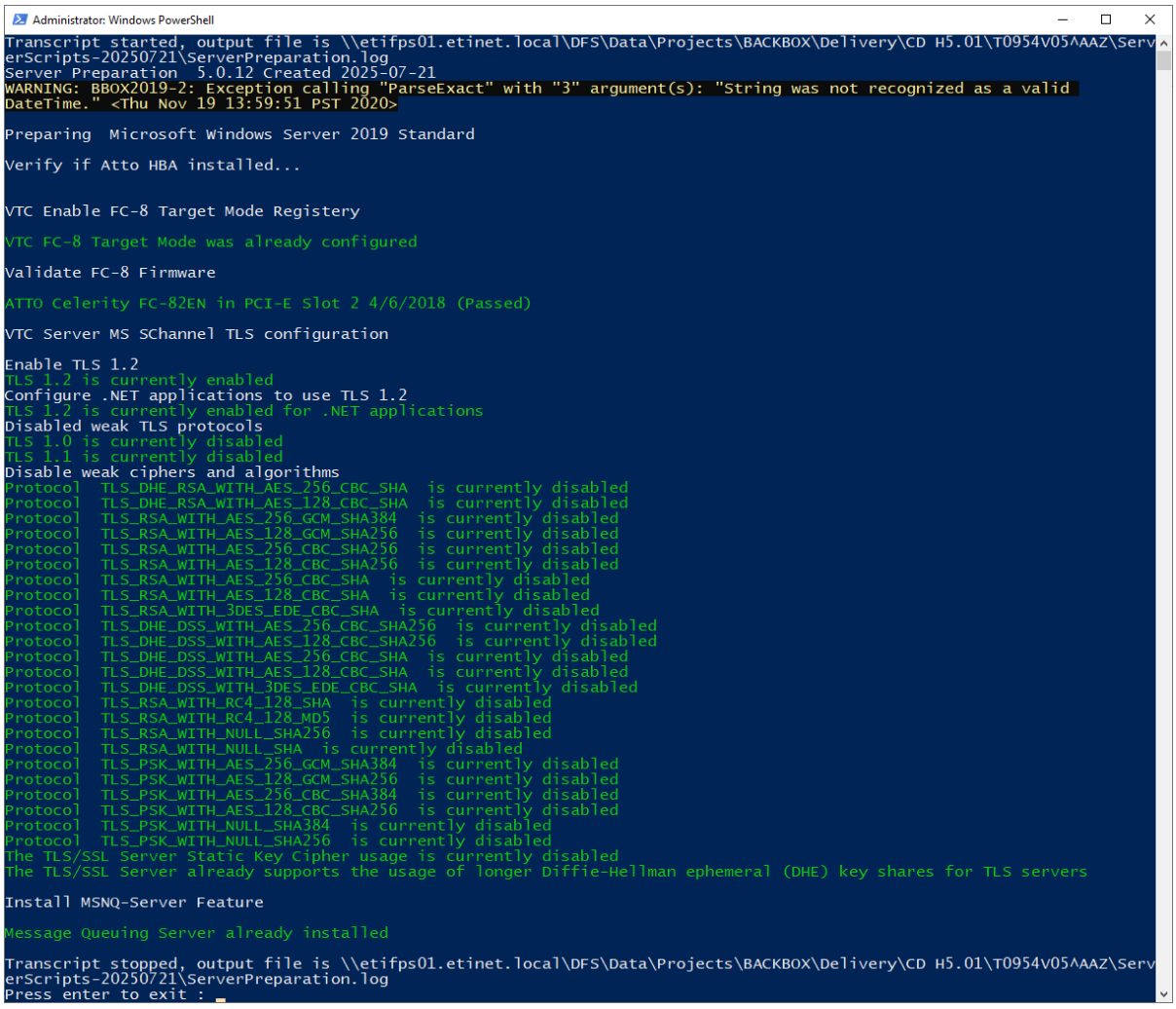
⚠	Before performing the VTC installation log in with the local Administrator account (Administrator user). Using such an account (with administrator privileges) may require an extra configuration step.

⚠	IMPORTANT: If you are using an account with Administrator privileges and not the local Administrator, start PowerShell command line using the Run as Administrator or pre-load macros before running scripts from a PowerShell command line: Import-Module Server Manager.

⚠	When using ATTO Fiber Card in Passthrough Mode, ATTO firmware updates will be automatically executed by the VTCServerPreparation script, delivered with the BackBox software package.

In the same folder you unzipped the installation package, locate the ServerScripts-yyyymmdd folder, right-click on the file VtcServerPreparation.ps1 and click on Run with PowerShell (or launch the script from the opened PowerShell command line).



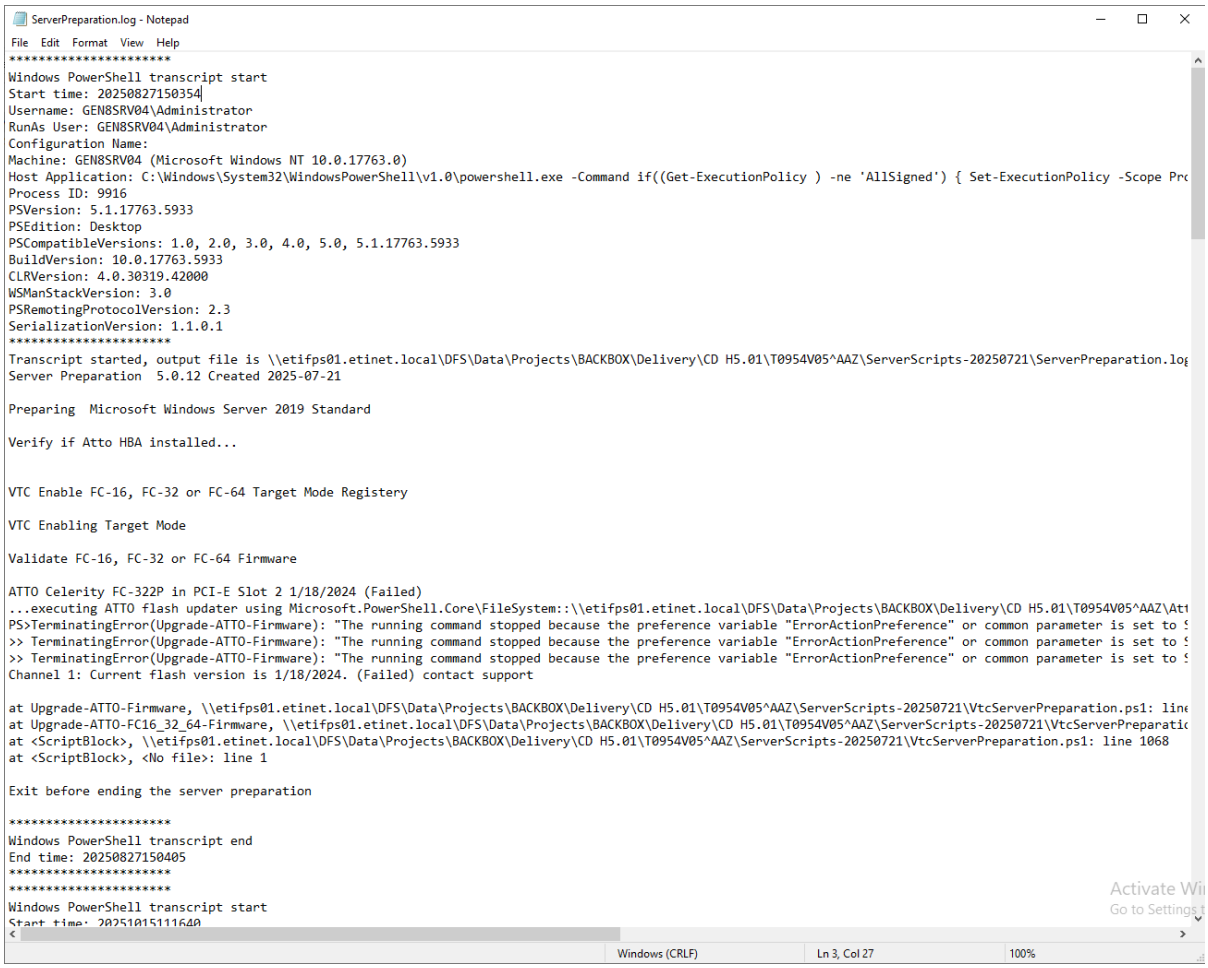


Click Y in the PowerShell to restart the server.

Reboot the server.

> ⚠ Some features will require rebooting the server. Re-execute this script until it shows there is no more feature needed to be installed (no red message in the PowerShell).

The server preparation script creates a specific log file in the script folder location: ServerPreparation.log. The transcript of each execution will be automatically logged into this file.


ServerPreparation.log - Notepad
File Edit Format View Help
****
Windows PowerShell transcript start
Start time: 20250827150354
Username: GEN8SRV04\Administrator
RunAs User: GEN8SRV04\Administrator
Configuration Name:
Machine: GEN8SRV04 (Microsoft Windows NT 10.0.17763.0)
Host Application: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe -Command if((Get-ExecutionPolicy) -ne 'AllSigned') { Set-ExecutionPolicy -Scope Pro
Process ID: 9916
PSVersion: 5.1.17763.5933
PSEdition: Desktop
PSCompatibleVersions: 1.0, 2.0, 3.0, 4.0, 5.0, 5.1.17763.5933
BuildVersion: 10.0.17763.5933
CLRVersion: 4.0.30319.42000
WSManStackVersion: 3.0
PSRemotingProtocolVersion: 2.3
SerializationVersion: 1.1.0.1
****
Transcript started, output file is \\etifps01.etinet.local\DFS\Data\Projects\BACKBOX\Delivery\CD H5.01\T0954V05^AAZ\ServerScripts-20250721\ServerPreparation.log
Server Preparation 5.0.12 Created 2025-07-21
Preparing Microsoft Windows Server 2019 Standard
Verify if Atto HBA installed...
VTC Enable FC-16, FC-32 or FC-64 Target Mode Registery
VTC Enabling Target Mode
Validate FC-16, FC-32 or FC-64 Firmware
ATTO Celerity FC-322P in PCI-E Slot 2 1/18/2024 (Failed)
...executing ATTO flash updater using Microsoft.PowerShell.Core\FileSystem::\\etifps01.etinet.local\DFS\Data\Projects\BACKBOX\Delivery\CD H5.01\T0954V05^AAZ\Att
PS>TerminatingError(Upgrade-ATTO-Firmware): "The running command stopped because the preference variable "ErrorActionPreference" or common parameter is set to S
>> TerminatingError(Upgrade-ATTO-Firmware): "The running command stopped because the preference variable "ErrorActionPreference" or common parameter is set to S
>> TerminatingError(Upgrade-ATTO-Firmware): "The running command stopped because the preference variable "ErrorActionPreference" or common parameter is set to S
Channel 1: Current flash version is 1/18/2024. (Failed) contact support
at Upgrade-ATTO-Firmware, \\etifps01.etinet.local\DFS\Data\Projects\BACKBOX\Delivery\CD H5.01\T0954V05^AAZ\ServerScripts-20250721\VtcServerPreparation.ps1: line
at Upgrade-ATTO-FC16_32_64-Firmware, \\etifps01.etinet.local\DFS\Data\Projects\BACKBOX\Delivery\CD H5.01\T0954V05^AAZ\ServerScripts-20250721\VtcServerPreparatio
at <ScriptBlock>, \\etifps01.etinet.local\DFS\Data\Projects\BACKBOX\Delivery\CD H5.01\T0954V05^AAZ\ServerScripts-20250721\VtcServerPreparation.ps1: line 1068
at <ScriptBlock>, <No file>: line 1
Exit before ending the server preparation
****
Windows PowerShell transcript end
End time: 20250827150405
****
****
Windows PowerShell transcript start
Start time: 20251015111640
Activate Wi
Go to Settings t
Windows (CRLF)
Ln 3, Col 27
100%

- Update the server with all critical updates recommended by Microsoft.
- Finalize the server configuration according to corporate standards. This usually includes an anti-virus installation.

As the vBB is a dedicated server, its configuration must be compatible with the BackBox application software and the server access must be restricted to the server manager.

Virtual Server Naming

It is important to name carefully the virtual server, as vBackBox software uses part of that name to generate the virtual tape device serial number.The last three (3) alphanumeric characters of the given name are included in the auto-generated serial number.
For example, a vBackBox named vBBOX-1 will show devices with the following serial number: BBOX1100, BBOX1101 and BBOX1102. The serial number always begins with BB followed by the three (3) alphanumeric characters taken from the VBackBox given name, followed by the adapter number (starting at 1), then by a target number.

In a multiple vBackBox environment, it is important to name the server in such a way as to ensure uniqueness in virtual devices serial number.

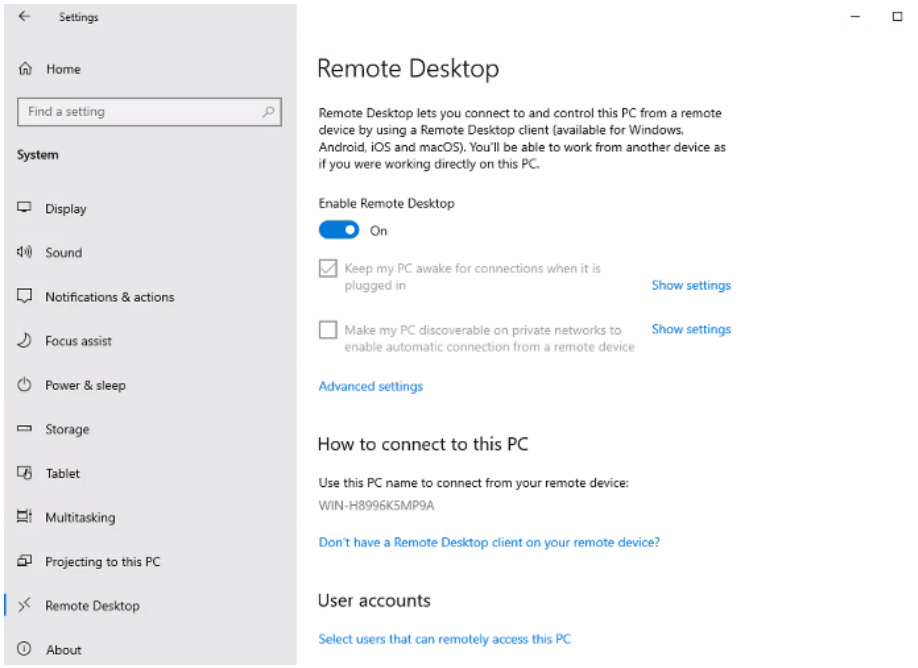
System Settings

Remote Desktop

Remote Desktop should be enabled to help server management.

To enable Remote Desktop:

- Press Start
- Select Settings
- Select Remote Desktop

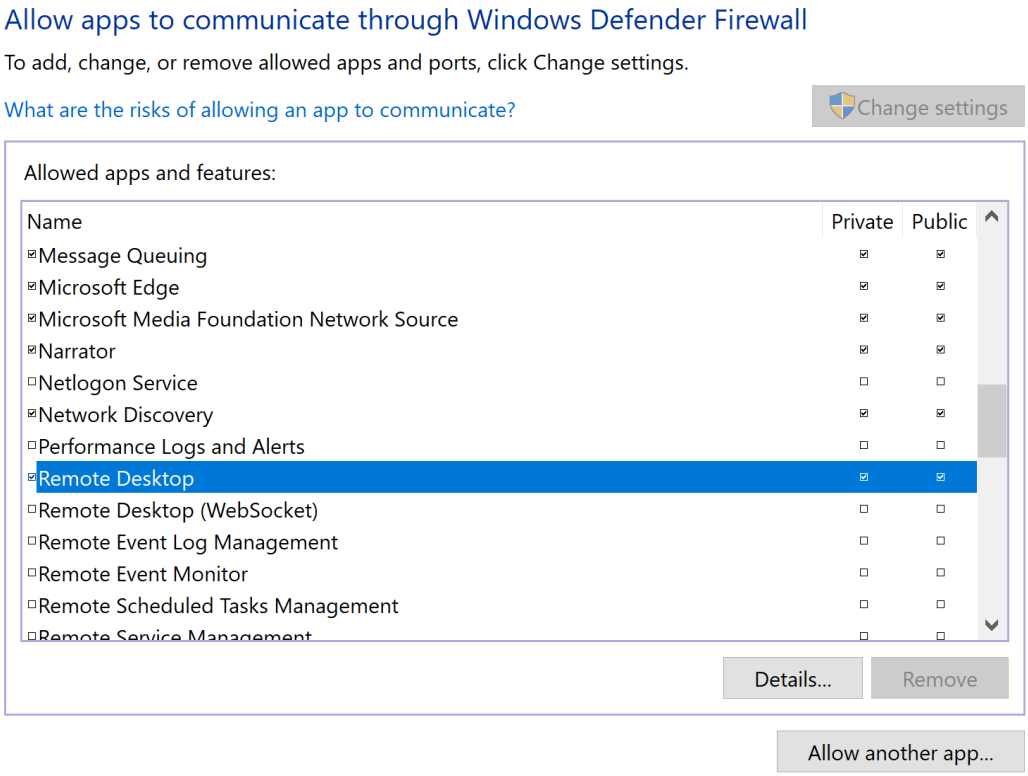


- Enable Remote Desktop - On

⚠	In case of a first-time configuration of the Remote Desktop – or if it needs to be re-enabled - a warning message will pop up. Enable the Firewall exception.

To enable the Firewall exception:

- Press Start
- Select Control Panel
- Select System and Security
- Under Windows Firewall, select Allow a program through Windows Firewall
- Scroll down to Remote Desktop and check the checkbox. Also check desired interface Domain, Private and Public check boxes



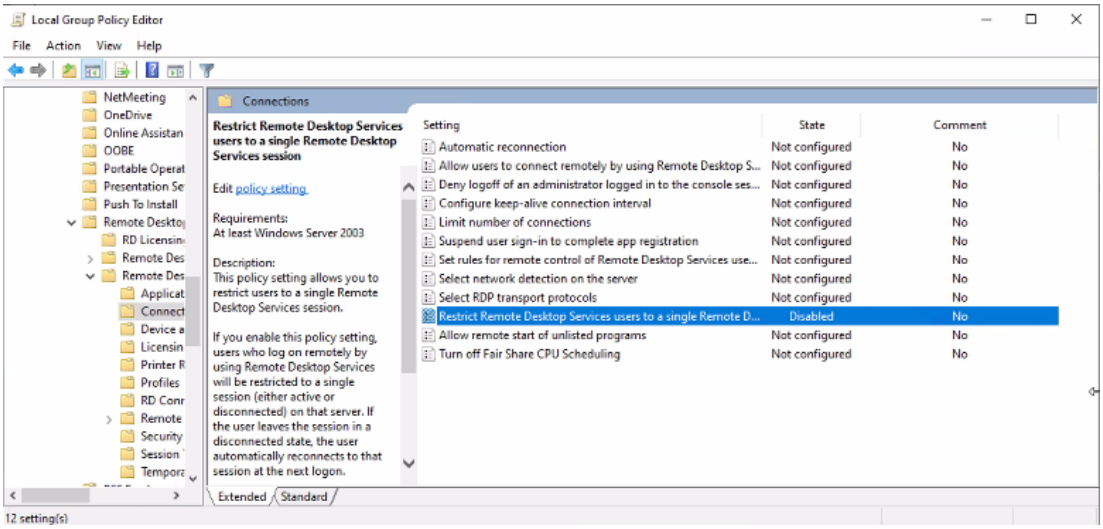
After opening the firewall, the warning message disappears from the Remote tab in the System Properties.

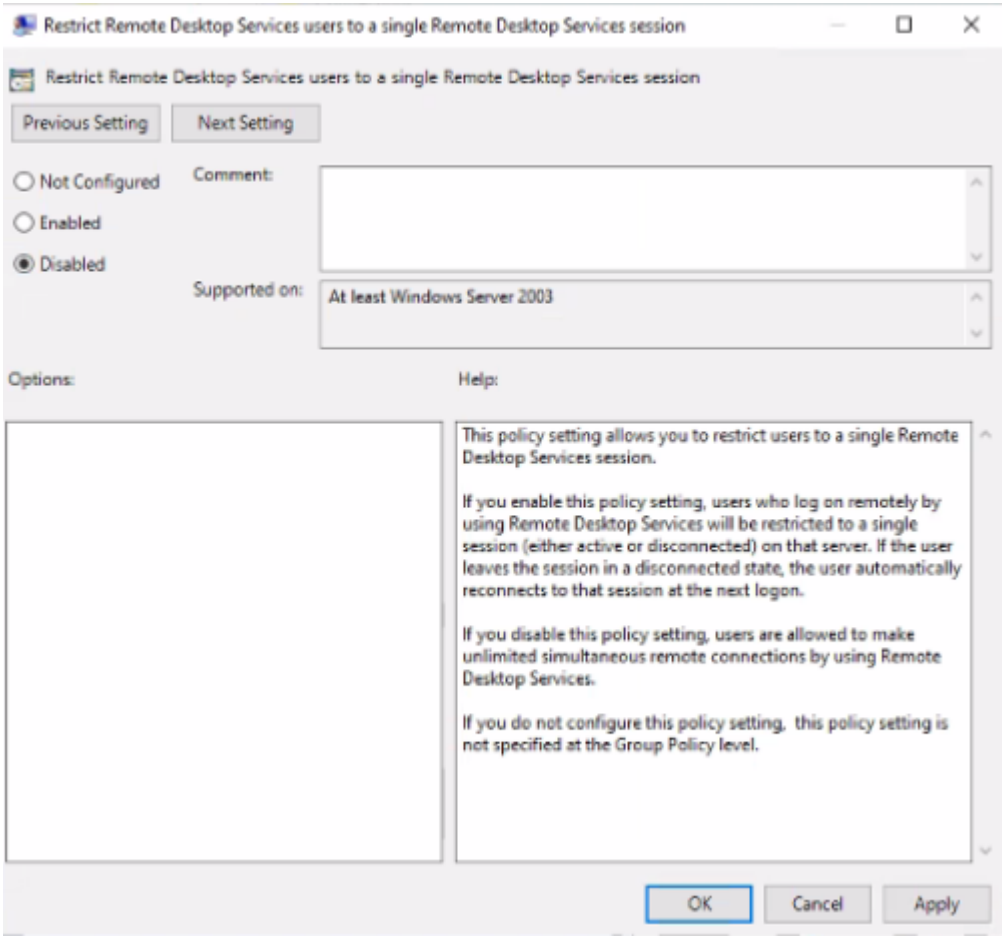
Remote Desktop Session Host Configuration

If two users attempt to perform a remote session using the same user credentials, the second user login session will be force-logged out by the first logged-in user's session. If there are two different users, who need to work on the same VTC using the same user's credentials, this restriction policy must be disabled in order to allow them to be connected in the same time.

To disable one user per session restriction policy:

- Press Start
- Type in the search dialog box gpedit.msc and start the program
- Navigate to: Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host > Connections
- Locate the Restrict Remote Desktop Services users to a single Remote Desktop Services session setting
- To edit the setting, double click on it and a dialog box will appear
- Check Disabled.
- Apply the change and close the dialog by clicking OK





Windows Update

Windows Update feature should be disabled. To do so, set to download update only or just notify updates availability. Update installation should be managed on a case-by-case basis.

This will avoid unexpected server restart while tape activities are in progress.

To setup Windows Update:

- Press Start
- Select Control Panel
- Select Settings
- Select Windows Update and disable automatic updates.
- Refer to organization group policies to disable Windows Update, if they are managed by your organization.

Advanced Sharing Settings

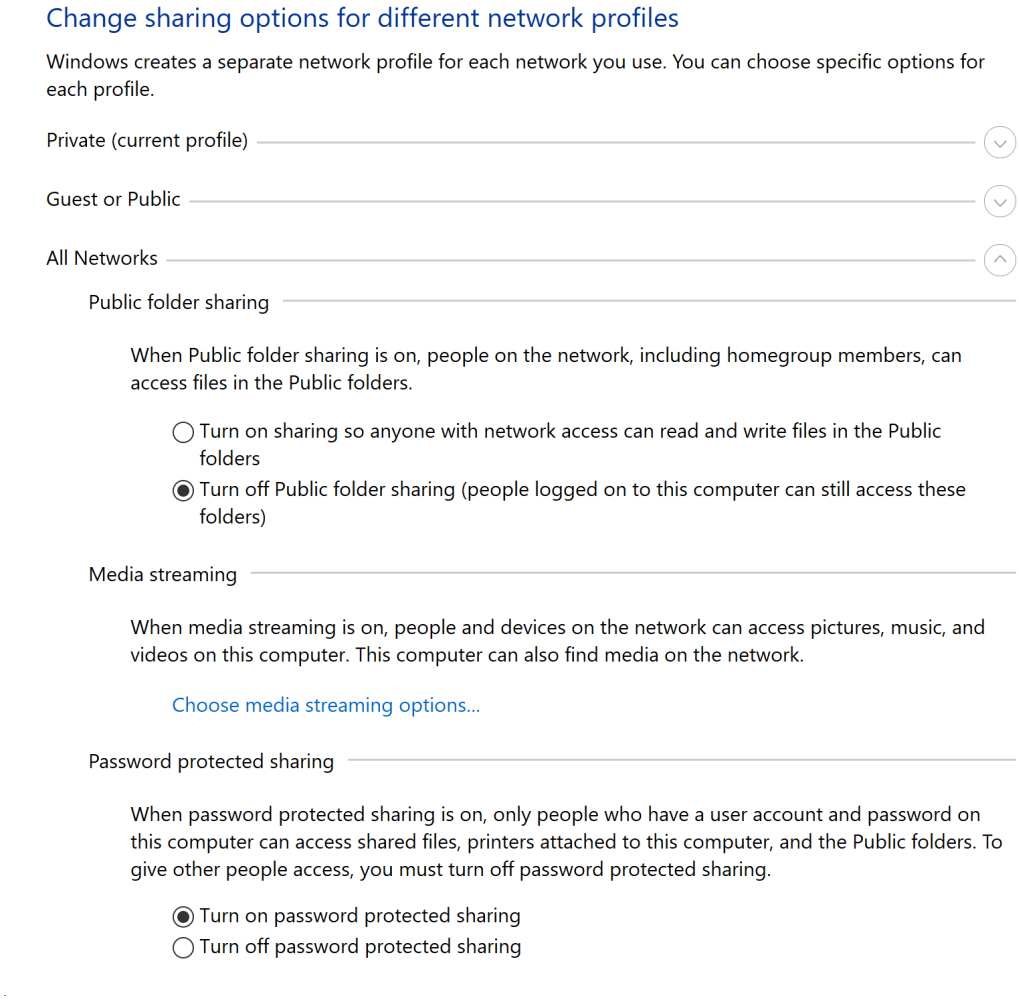
Advanced sharing settings need to be configured to allow server share creation. BackBox Data store is using network share to access NAS or other BackBox data path.

To configure the Advanced Sharing Settings:

- Press Start
- Select Control Panel
- Select Network and Internet
- Select Network and Sharing Center
- Select Change advanced sharing Settings

ATTENTION: If VTC server is part of a Workgroup, the Domain profile will not be shown. A new profile Domain will be added and will require to be set when the server joins the Active Directory.

	Private	Public	Domain	ALL Networks
Network discovery	Turn off	Turn off	Turn off	n/a
File and printer sharing	Turn on	Turn on	Turn on	n/a
Public folder	n/a	n/a	n/a	Turn off

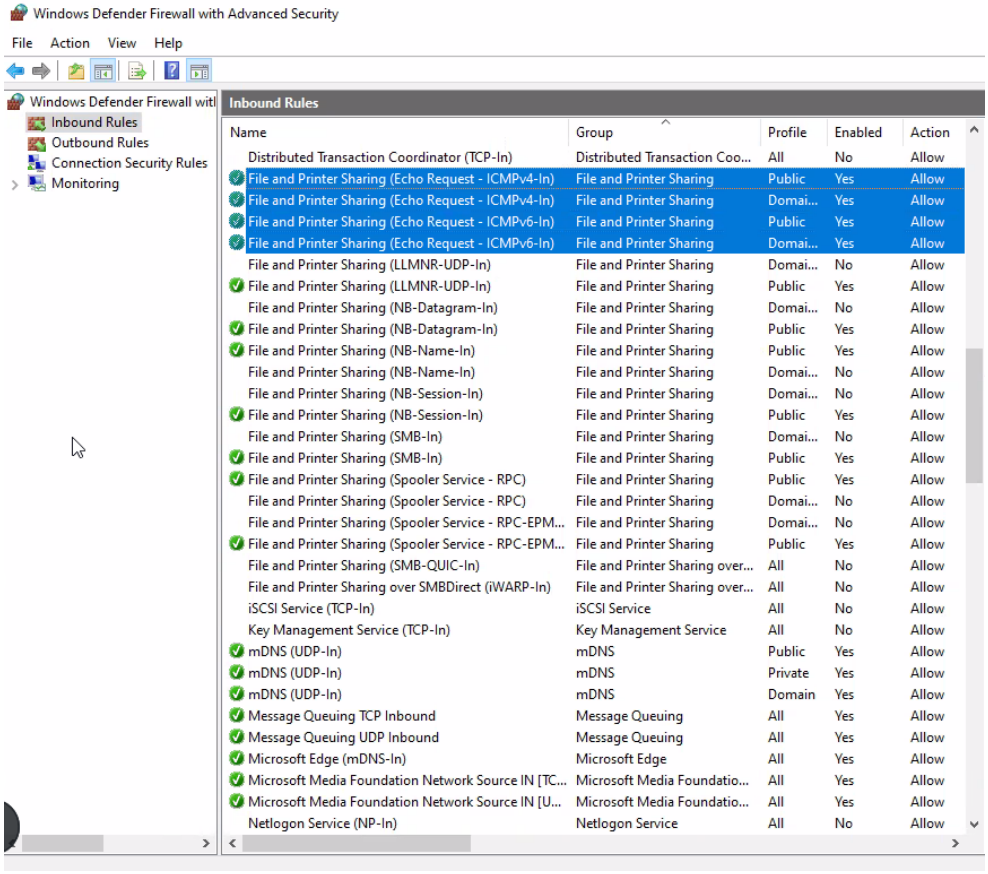


Firewall Settings

We recommend enabling ICMP incoming echo request (ping) for troubleshooting purposes or to allow monitoring tools to work properly. By default, ICMP incoming echo request (ping) firewall rules are defined, but disabled.
When the server gets the Files Server role installed with the Advanced sharing settings file and printer sharing turned on, ICMP incoming echo request firewall rules are automatically enabled. The server will answer to the ping request.
If the server has been prepared following the guidelines provided in this document, this setting is the recommended one.
In other cases, the rules can be manually activated by following these steps:

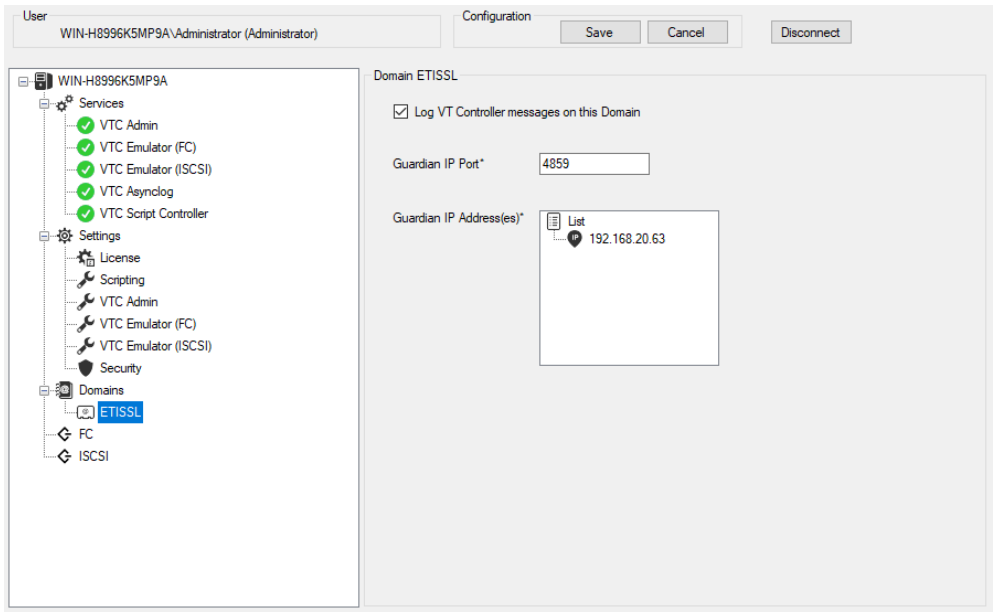
To manually activate ICMP incoming echo request (ping)

- Press Start
- Search for Firewall and Network Protection
- Go to Advanced Settings
- In the left pane and select the Inbound Rules
- Scroll down to File and Printer Sharing (Echo Request) and enable the rule for Private, Public rules and Domain rules if the VTC is under an Active Directory.



Domain Node

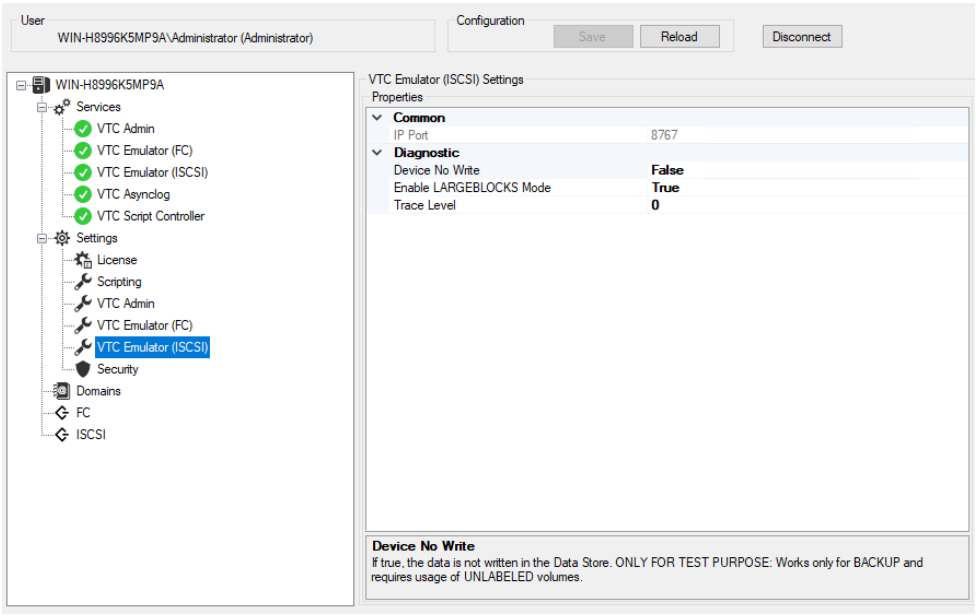
Add all Domain profile for each Nonstop node be connected to the vBackBox.



VTC EMULATOR (ISCSI)

⚠	These settings must not be changed before communicating with technical support.

When VTC Emulator (iSCSI) is selected, the available properties for the service are displayed on the screen in the right-hand side panel. There are no actions available when right-clicking on the VTC Emulator (ISCSI) setting node.



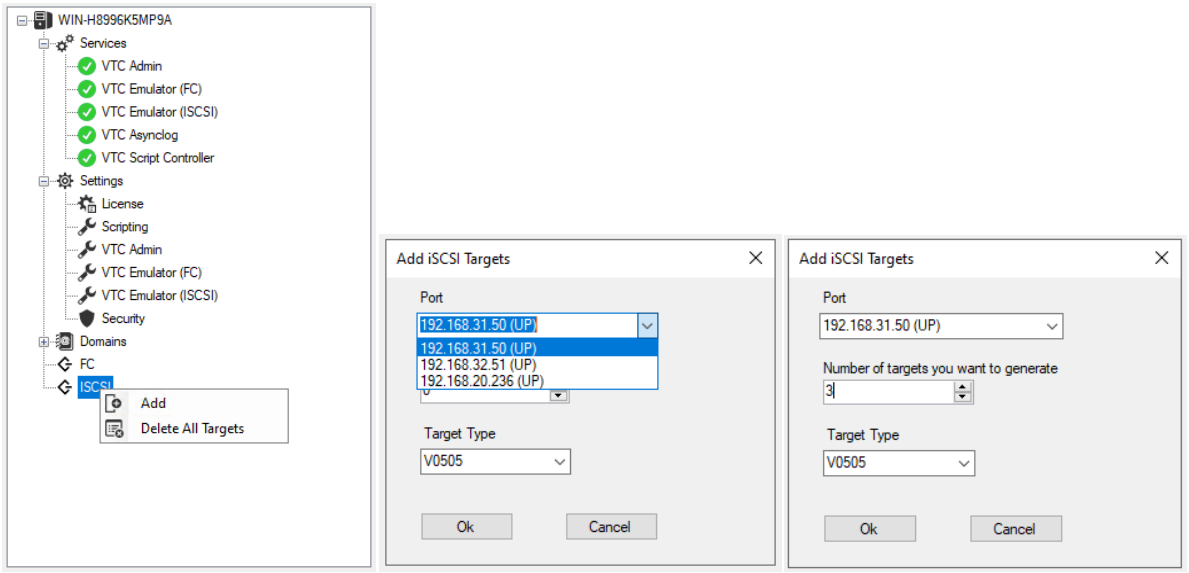
A window indicates read-only properties associated with the specified setting. When selected, any of the listed properties is shortly explained at the bottom of the window.
Any changes made to this page require restarting the services.

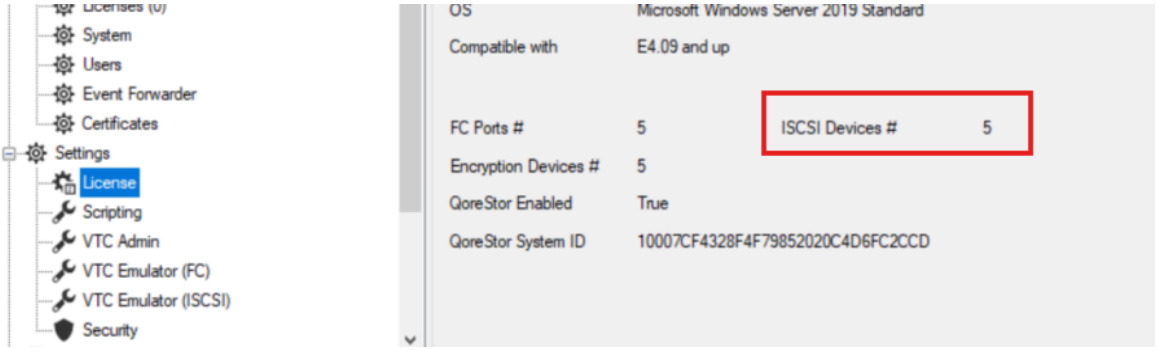
iSCSI Node

All VTC iSCSI configurations are grouped under the iSCSI category node. Changing any of the elements described below requires restarting services.
When the iSCSI category node is selected, no information is shown in the right-hand panel.

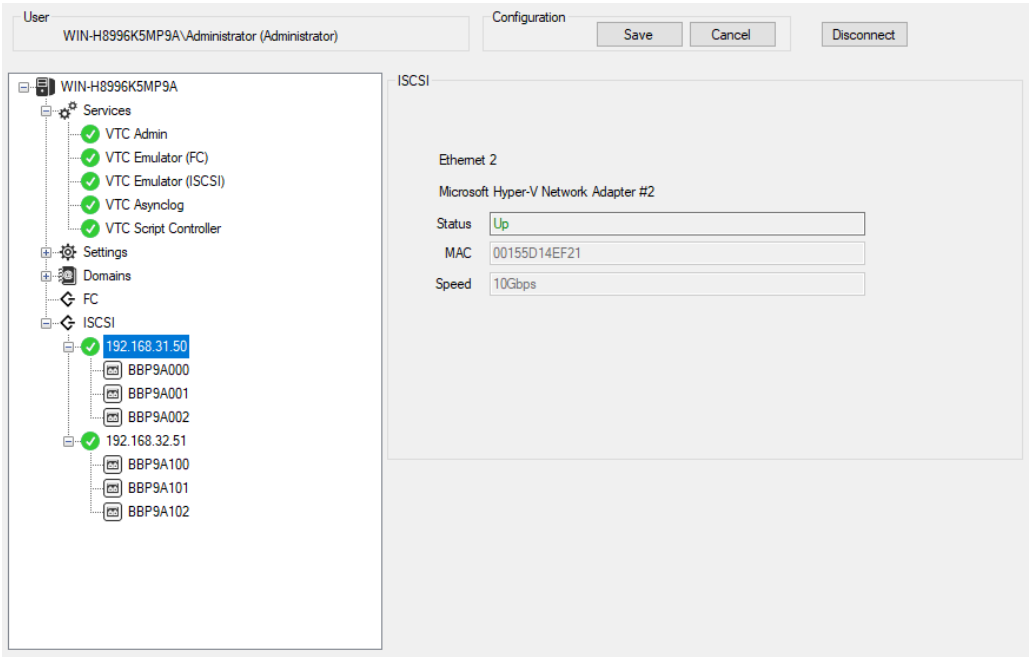
ISCSI CONFIGURATION

1. Configuration of the iSCSI is done through the VTC Management Console.
2. Add the NIC address to be used to connect with the Storage CLIM.
3. Provision virtual tape devices under the selected NIC address and several NIC addresses can be added. The virtual tape devices will need to be deployed across these NIC addresses.
4. Open the VTC Management Console and follow the procedure to add the iSCSI devices:
5. Right-click on the iSCSI node in the VTC Management Console and click Add to display the iSCSI device creation box.

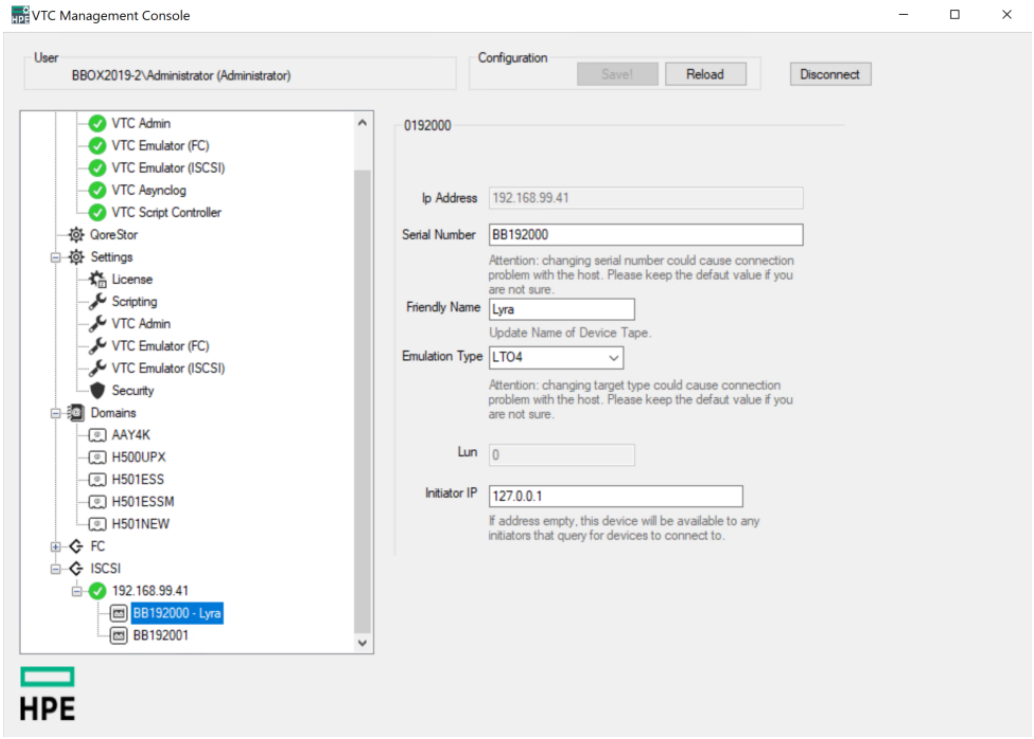




6. In the pop-up window, first select a NIC address to be used for the Storage CLIM connection and choose the number of targets (up to maximum 12 devices per port) to be added with tape emulation type. If you have a limited number of targets licensed, you can either add them to the same storage CLIM or spread them across all ports. Click ok.
3. If you have multiple ports dedicated to different CLIM connection, the Add iSCSI Targets procedure needs to be redone for each port.
4. Once the targets are added, they will be shown under each IP address.



5. Select, one by one the targets and define its connection parameters. Changing the Serial Number and/or the target Type could cause connection errors.



a. Serial Number is the target identifier and shouldn't be modified, as the connection is securely established with the host based on the serial number

b. Friendly Name is the name given by the user and displayed next to the device serial number (in case the device has been given a friendly name)

c. Emulation Type is the emulation tape type to be used for the target (V0505, LTO4, LTO6 to LTO8).

d. Lun is assigned by default and cannot be changed, as it's used to provision virtual devices.

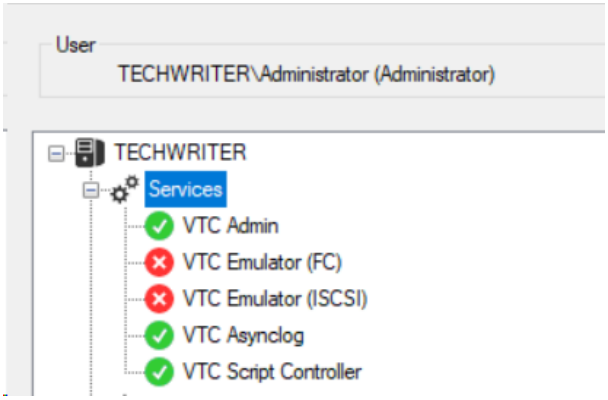
e. Initiator IP links the selected target to a specific CLIM. Once linked, the iSCSI device will only answer to the discovery command from that specific storage CLIM. By default, new added device is assigned with a dummy value of 127.0.0.1 that must be changed with the CLIM storage IP address of the target device to be to connected to. The new added device IP address can be left blank to answer to any CLIM storage.

⚠	If not updated and left with the default value (127.0.0.1), the target device will not answer to any CLIM storage when attempting to adding iSCSI tape target devices by using the CLIMCMD `--addiscsitape`. If updated to blank, the target device will answer to any CLIM storage when attempting to adding iSCSI tape target devices by using the CLIMCMD `--addiscsitape`. If updated to a specific CLIM address IP, the target device will only answer to that specific CLIM storage when attempting to adding iSCSI tape target devices by using the CLIMCMD `--addiscsitape`.

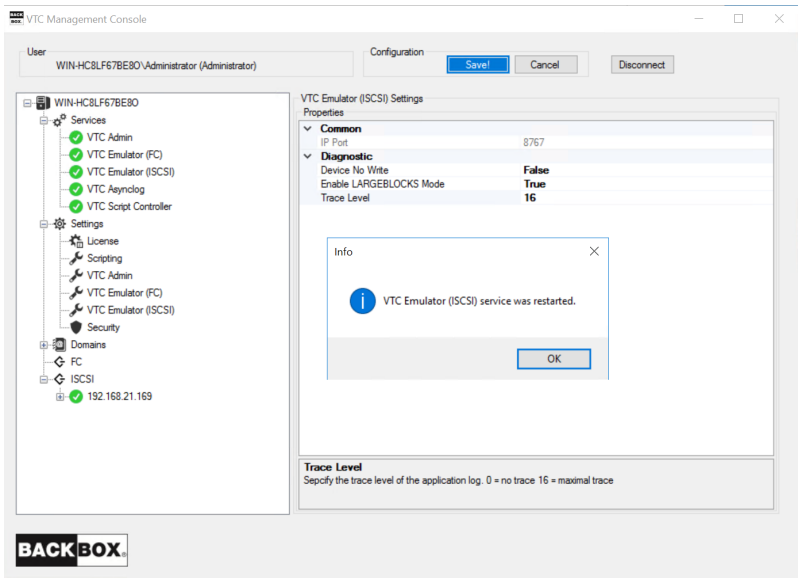
5. Save the configuration or Cancel it.

6. If you want to delete targets, select the target and right-click on it. Then Delete.

7. Once you have completed the change, the VTC Services will automatically restart by clicking the Save button.



Any changes made to this page, requires restarting VTC Emulator (iSCSI) service for the change to take effect.

⚠	Save the changes by clicking the Save button under Configuration tab. The pop-up window will prompt the restart of the VTC Emulator (iSCSI) service. 

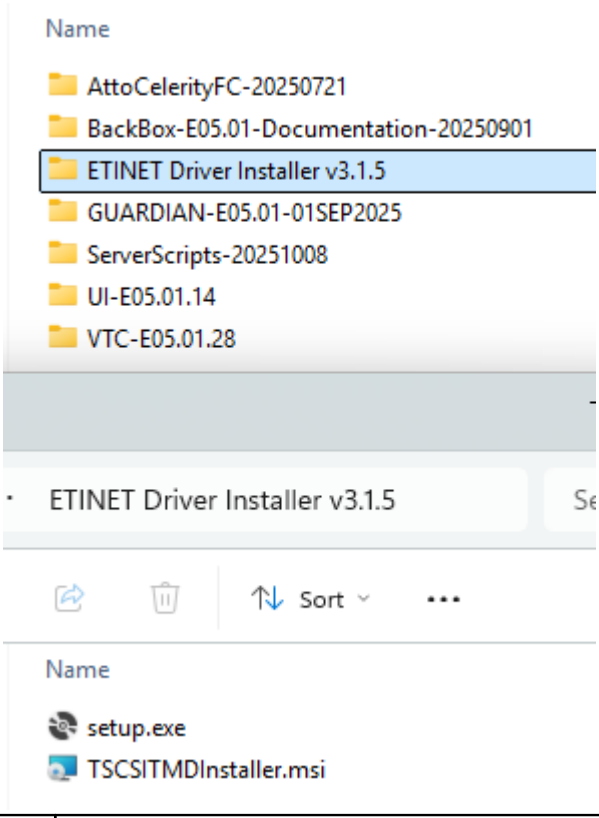
Install the Virtual Tape Controller Software

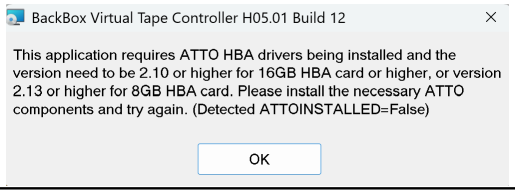
PRE-INSTALLATION

Administrator account under Windows on the server acting as the VTC.

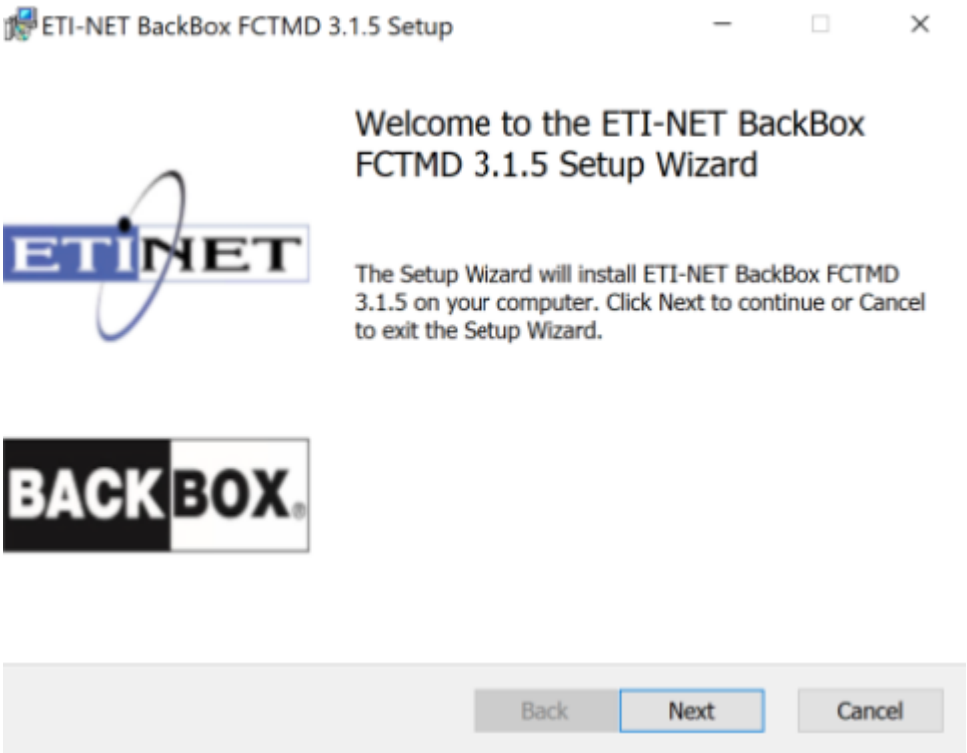
- Install VTC BackBox-specific driver TSCSITMInstaller.msi, located in the folder ETINET Driver Installer, delivered with the BackBox package.

1. Open the folder ETINET Driver Installer and then TSCSITMDInstaller.msi

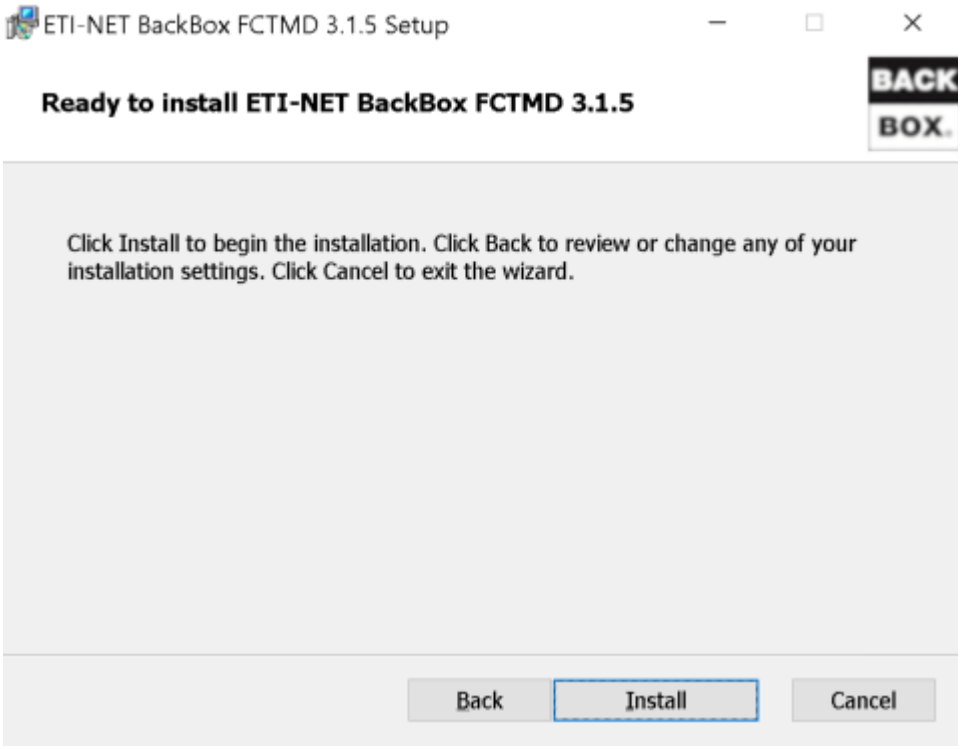


⚠	If prompted with a pop-up requiring the installation of ATTO HBA drivers, proceed with installing these drivers before running the TSCSITMInstaller.msi Wizard 

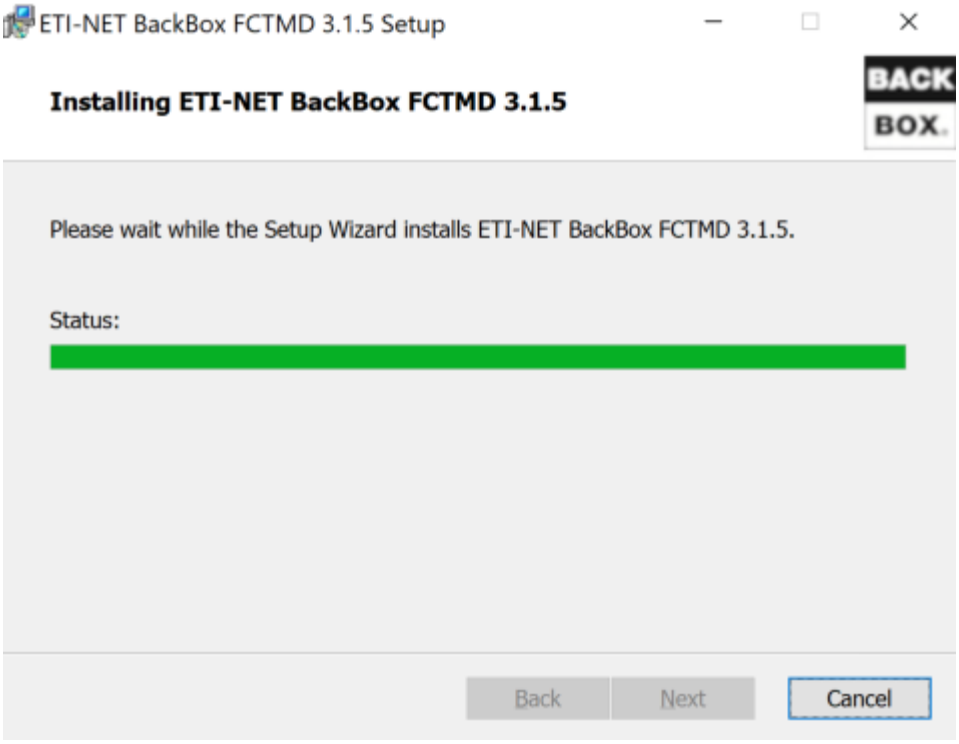
2. Run the installer Setup Wizard and click Next.

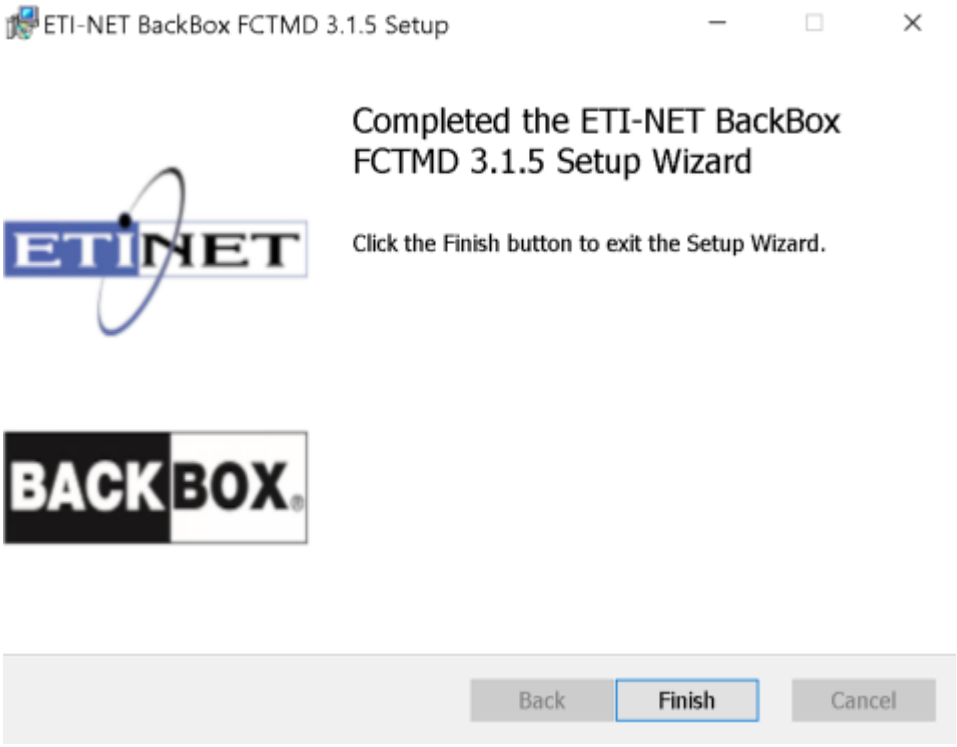


3. Click Install to begin installation.

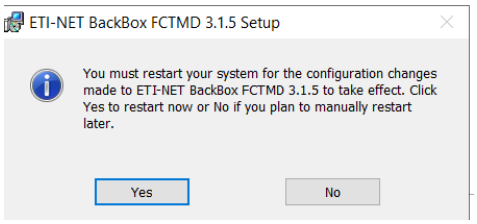


4. Once the installation is complete, click **Finish** to exit the Wizard.





5. In order to complete the installation, the VTC needs to be restarted. Click Yes in the pop-up window.



⚠	The VTC Windows services will start and will issue various messages to EMS.

- Install the VTC application from the BackBox distribution package directory VTC-E.nnn: run setup.exe.

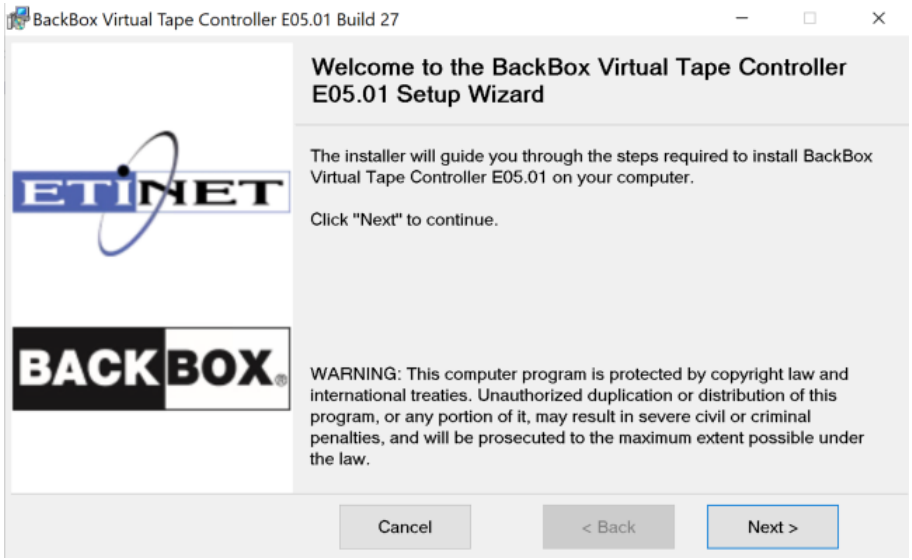
Install the latest UI version from the BackBox distribution package directory UI-E.nnn: run setup.exe.

After the installation it is recommended to:

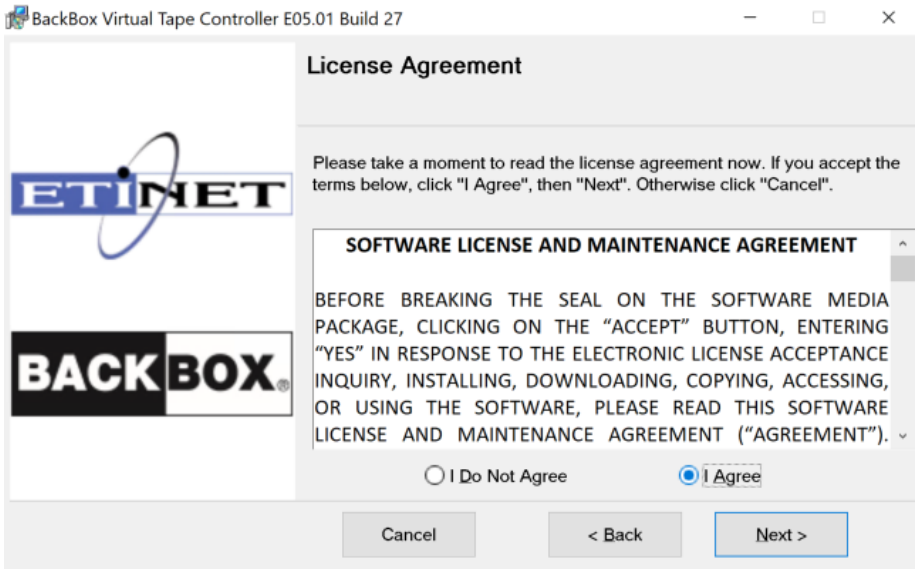
- Reboot the system and verify if all the services have been restarted. Check the EMS message report.

DESCRIPTION

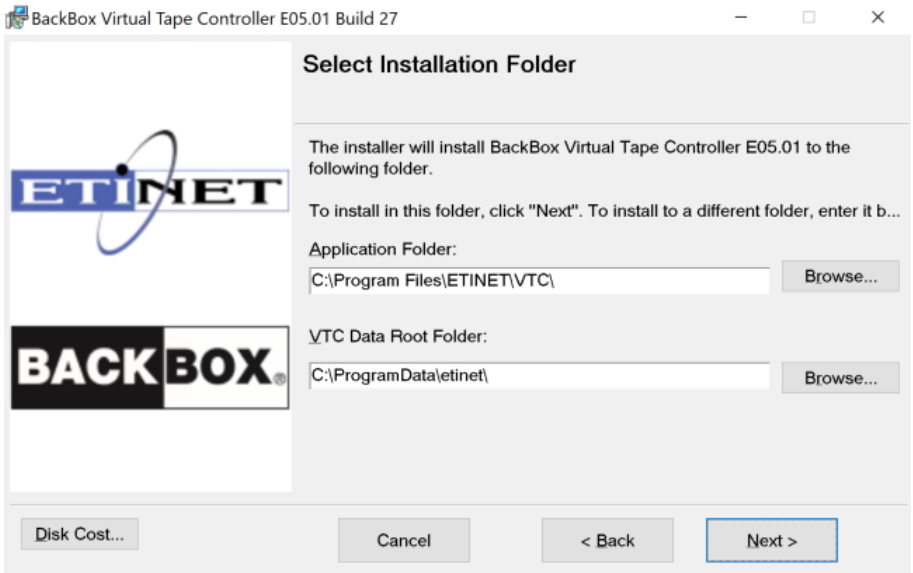
In the folder you uploaded the locate the VTC-E5.01 folder. Double-click on Setup.exe and follow the installer instructions.

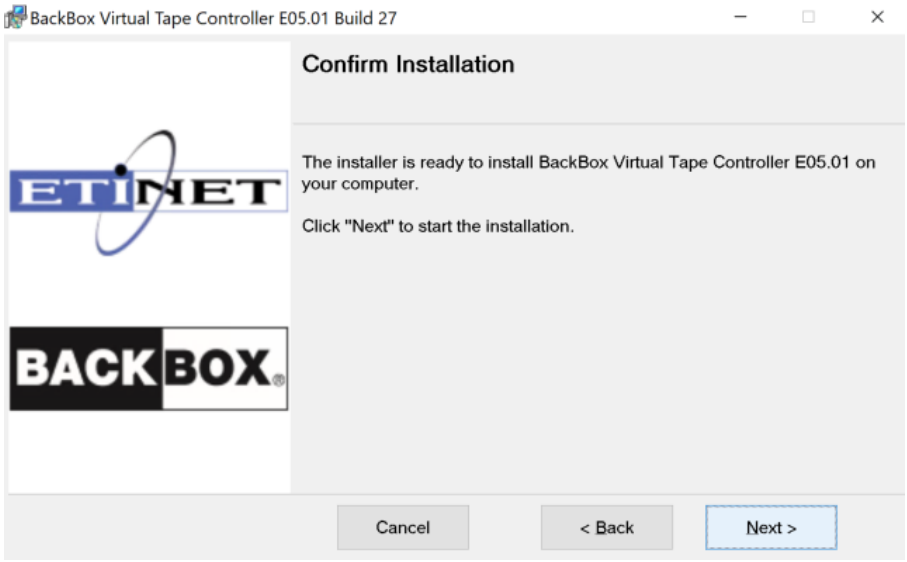


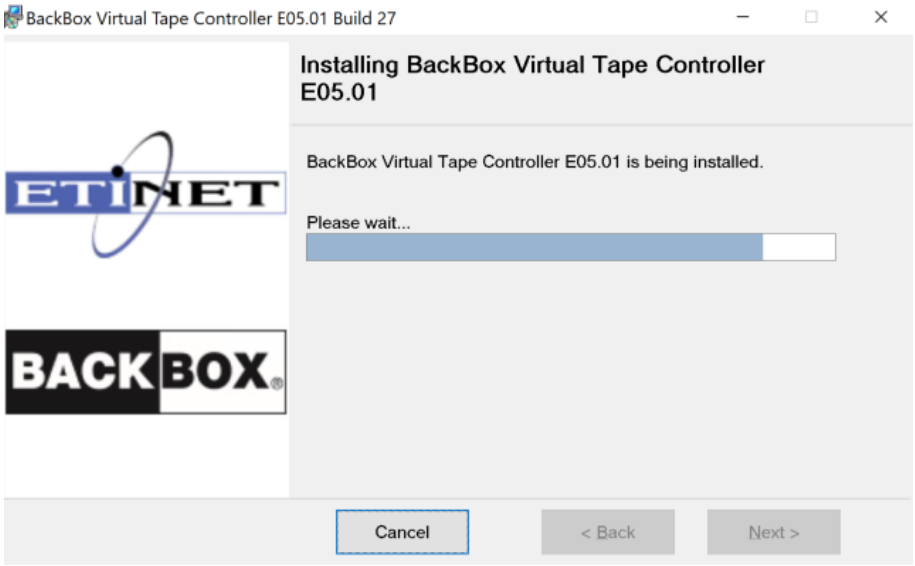
You will then be prompted to read and accept the license agreement. Click I Agree to proceed with the installation, a complete copy of the license agreement is available at the end of the present document.

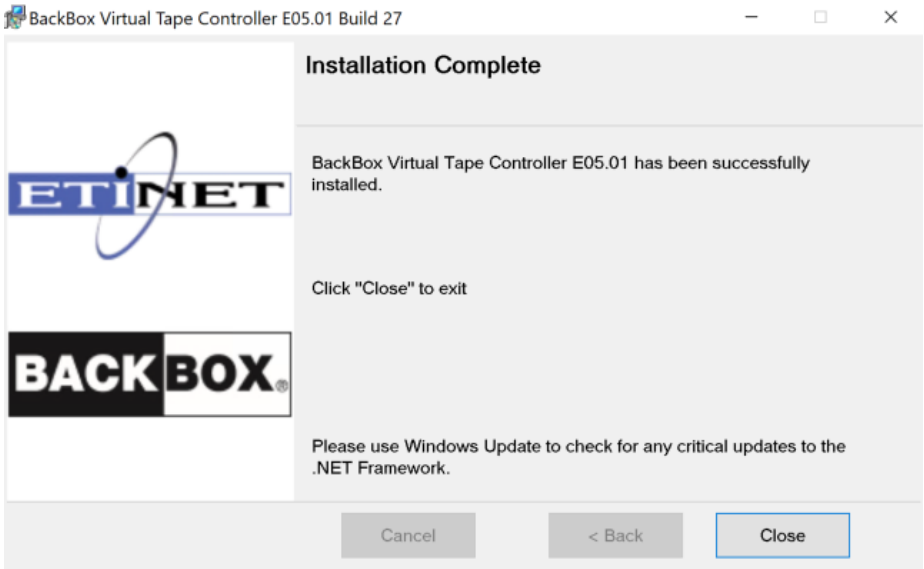


Installation is now ready to start. Click the Next button to initiate the process.









⚠	In case the VTC version comes with a patch, the patch is being installed along with the controller and is being mentioned between brackets.

Once the installation process is over, click the Close button. BackBox VTC software is installed, ready to be used.

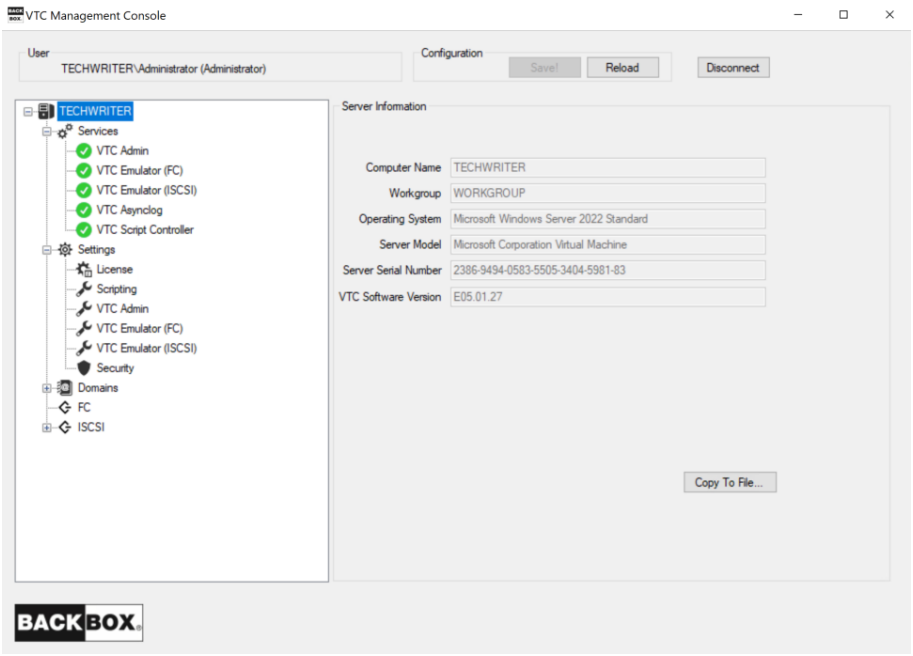
Customize Server Identity

HOST FILE

Edit the HOSTS file and map the server host name with all alias name to his loopback address. By doing so, you avoid bad DNS hostname resolution to local network resources, when one Ethernet adapter failed or it had network traffic down. This is a configuration requirement for cross-connected VTC pairs.
The host file is located in the system folder Windows\System32\drivers\etc\. For example, for a VTC with a server name BBOX1:

```
# localhost name resolution for BBOX1handled within DNS to itself.
127.1.1.1    localhost
127.1.1.1    BBOX1.etinetlab BBOX1.backboxlocal BBOX1
```

License Request



For the license request, go to VTC MC > Server Information > Copy To File...
Use Copy to File ... button to save the server information in a .txt file. The file will be saved with the default name Server Information and default location Desktop. For support and reference purposes, location and name of the file can be changed at any time.
Request a vBackBox license through the License Desk, using the license information in the file.

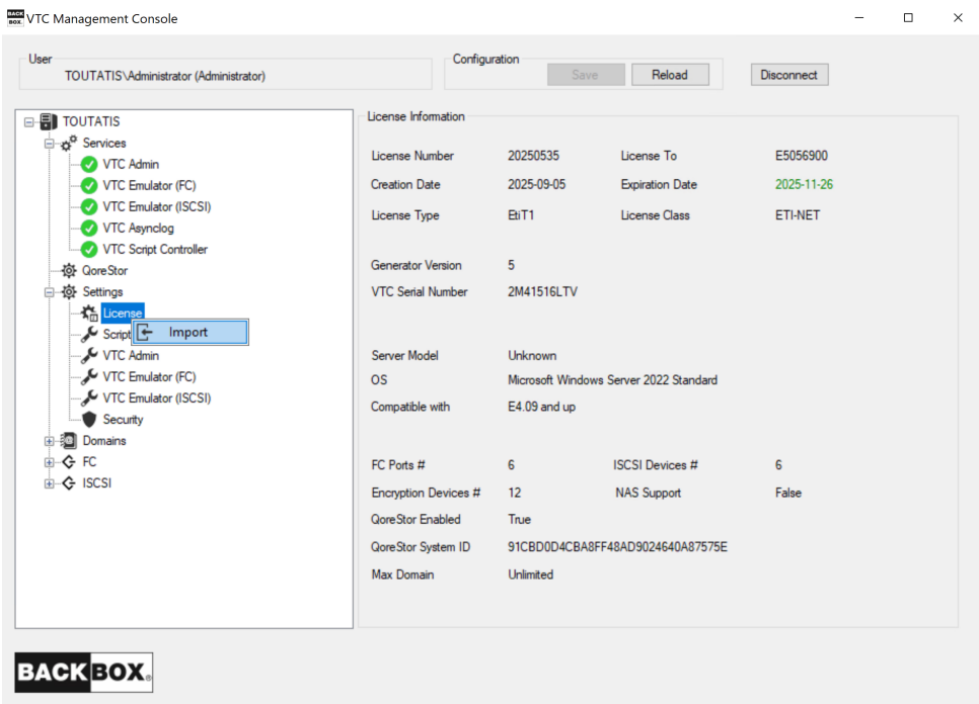
TECHWRITER - Notepad

File Edit Format View Help

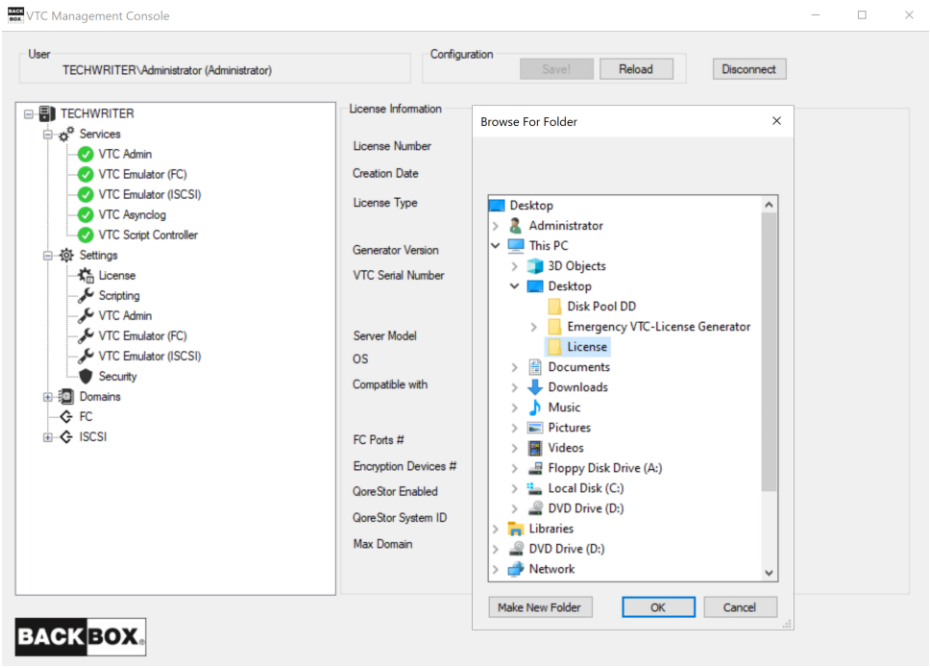
```
Computer Name: TECHWRITER
Workgroup: WORKGROUP
Operating System: Microsoft Windows Server 2022 Standard
Server Model: Microsoft Corporation Virtual Machine
Server Serial Number: 2386-9494-0583-5505-3404-5981-83
VTC Software Version: E05.01.27
UUID: C351FC8E-6BA0-4CDD-BB1A-BE8BA197D1D5


License Number: xxxx0004
License Expiration : 2025-09-25T15:23:30.5973104Z
License Creation : 2025-09-11T15:26:09.5776437Z
License To: E505690
Serial Number: 2386-9494-0583-5505-3404-5981-83
HPE System Number: Unknown
License Type: Emergency
Generator Version: 0
Release Version: E
Software Version: 4.09
Product: Unknown
Os Version: Microsoft Windows Server 2022 Standard
Number Of FC Ports : 2
Number Of Encryption Devices: 1
Number Of Iscsi Devices: 2
Number Of Devices Per Port : 64
QoreStor Enable: False
QoreStor ID: Unknown
Storage Limit: -1TB
External Storage: NONE
NonStop Node 1: Unknown
NonStop Node 2: Unknown
```

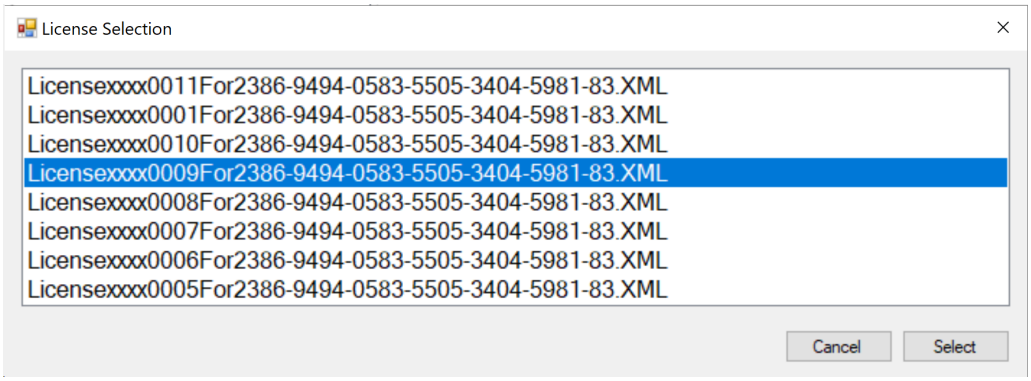
Once you receive the license file (XML format), upload it on the vBackBox and import it.
Go to VTC MC, right-click on the License node under Setting and Import.

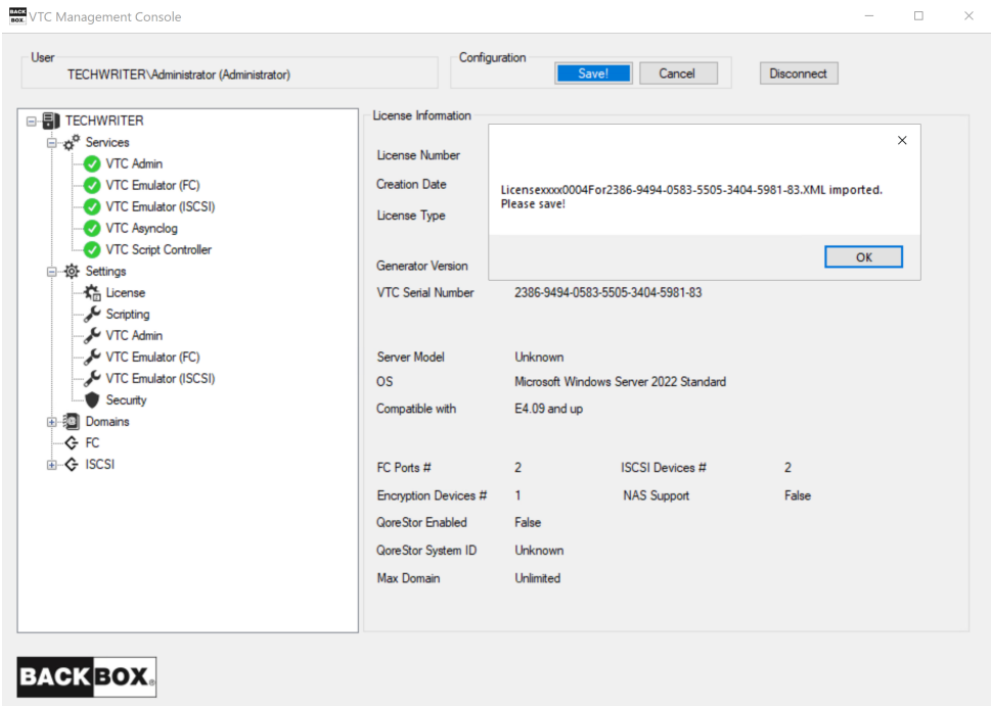


In the pop-up window, browse for the folder the license file has been copied to and click the OK button. In this example the license file has been copied on the Desktop in the folder License.

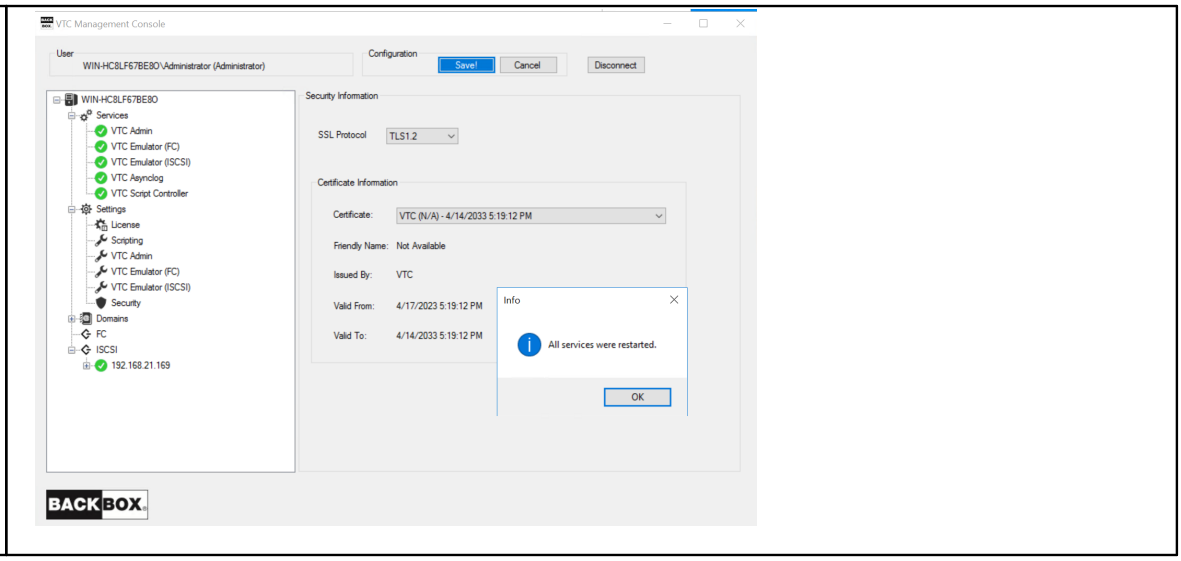


In the License Selection dialog select the license XML file. Click Select and then Save the configuration.



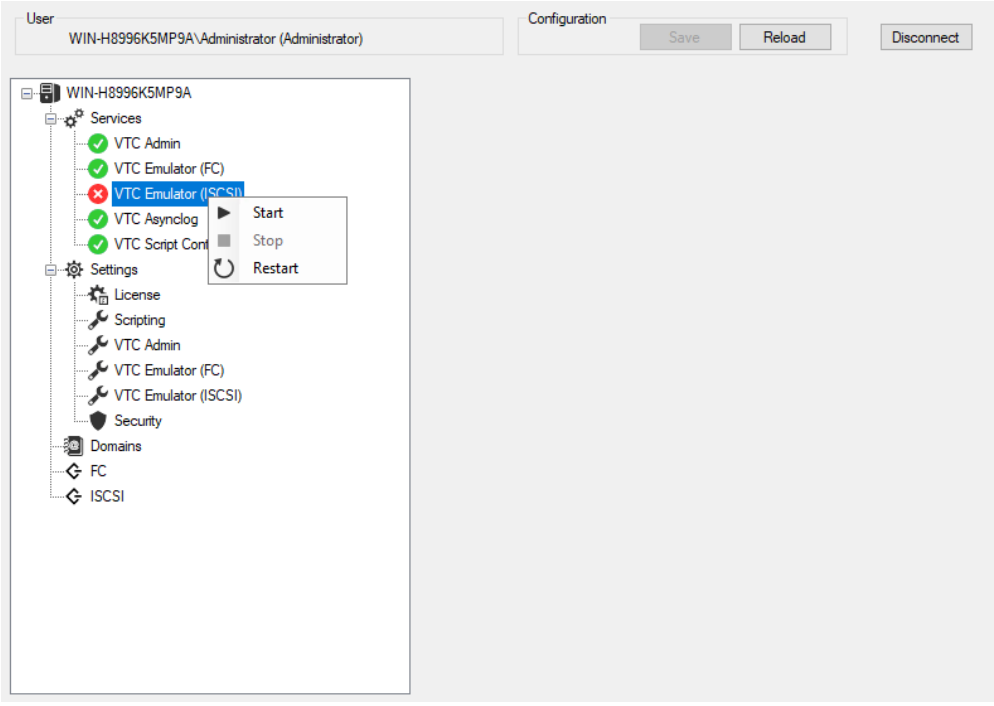


⚠	Save the changes by clicking the **Save** button under **Configuration** tab. The pop-up window will prompt the restart of all services.



Start Services

Starting the services finishes the installation of the vBackBox VTC and it makes the system ready for configuration.
Validate that all services listed under the Services node are started – marked with a green checkmark.
An X icon will be shown in front of the service name, if the service has been stopped.



Connect Virtual Tape Device to Virtual NonStop System

Virtual tape devices are connected to a virtual Nonstop system through the storage CLIM. The CLIMs provisions the network adapter accessible on the corporate LAN (different from the vNonstop maintenance LAN).

The following new commands are available to add and remove iSCSI tape target devices on a CLIM:

-t or `--addiscsitape`	<iscsi target ip address> Initiates a discovery request to an iSCSI target at the input IP address. Then it logs in to all new targets. The `addiscsitape` command is only applicable to virtual CLIMs.
`--deliscsitape`	<iscsi target name> Initiates a logoff request to an iSCSI target at the input iSCSI target name and deletes the target from the database. The `deleteiscsitape` command is only applicable to virtual CLIMs.

Adding and deleting iSCSi tape devices can be done using the lunmgrutility of a climcmd. A basic add command would look like this:

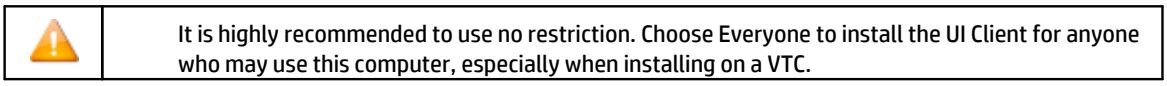
```
climcmd SCLIM000 lunmgr -t 192.168.30.20
```

This command would be adding all virtual iSCSI tape devices on the vBackBox located at the IP address 192.168.30.20.

Install BackBox UI Client

To install the BackBoxUI Client:

1. Open the BackBox distribution set and navigate to the UI-v.vv.vvvvv directory.
2. Run Setup.exe.
3. Launch the UI Client Setup Wizard and follow the steps required to install the application. Click Next.
4. Select the installation folder. Use the default folder or browse to install the UI Client to a different folder. If the access to the UI Client must be restricted to the current user, select Just me.

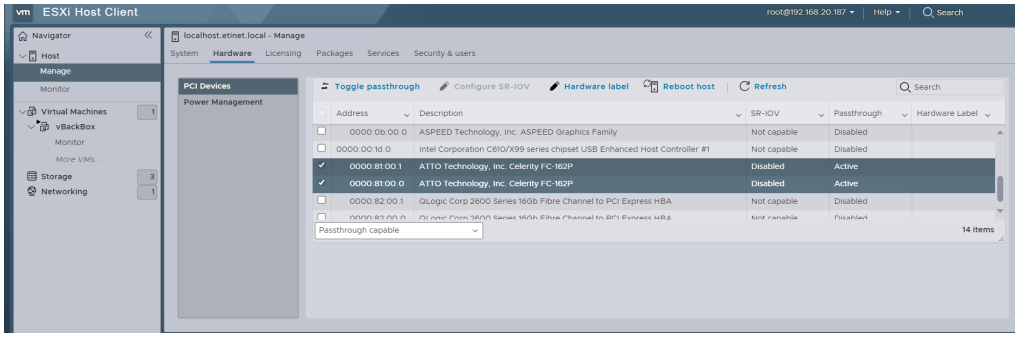


5. Follow the Wizard installation steps.
6. Once the installation is complete, close the Wizard and use BackBox User Interface to connect to each Domain configured.

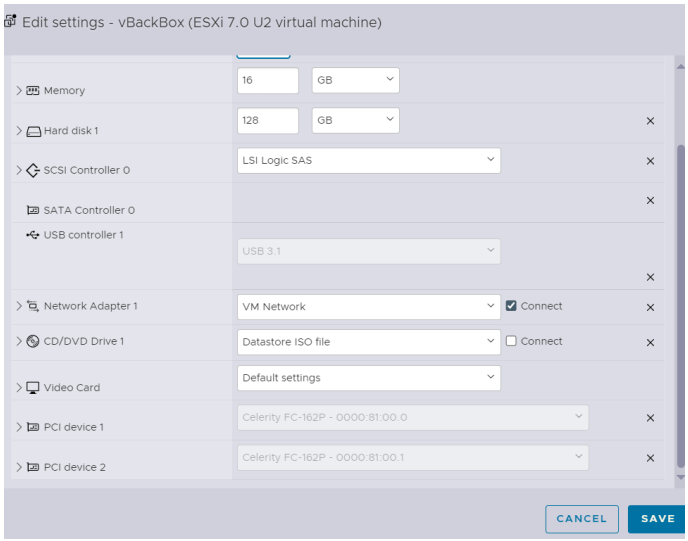
Atto HBA Target Mode in VMWare ESXi Passthrough Mode

ENVIRONMENT PREPARATION FOR VM WARE

- Install the physical Atto HBA into the ESXi hypervisor server.
- In the ESXi client, find Atto HBA port and activate the Passthrough mode



- Assign Atto port in the vBackBox VM setting. The VM needs to be shut down. In the setting editor add a new PCI device.



- Start the VM. The new ATTO devices are displayed in Device Manager. Install the drivers from the distribution package provided (AttoCelerityFC-yyyymmdd) and resume the server preparation script (VTCServerPreparation.ps1).