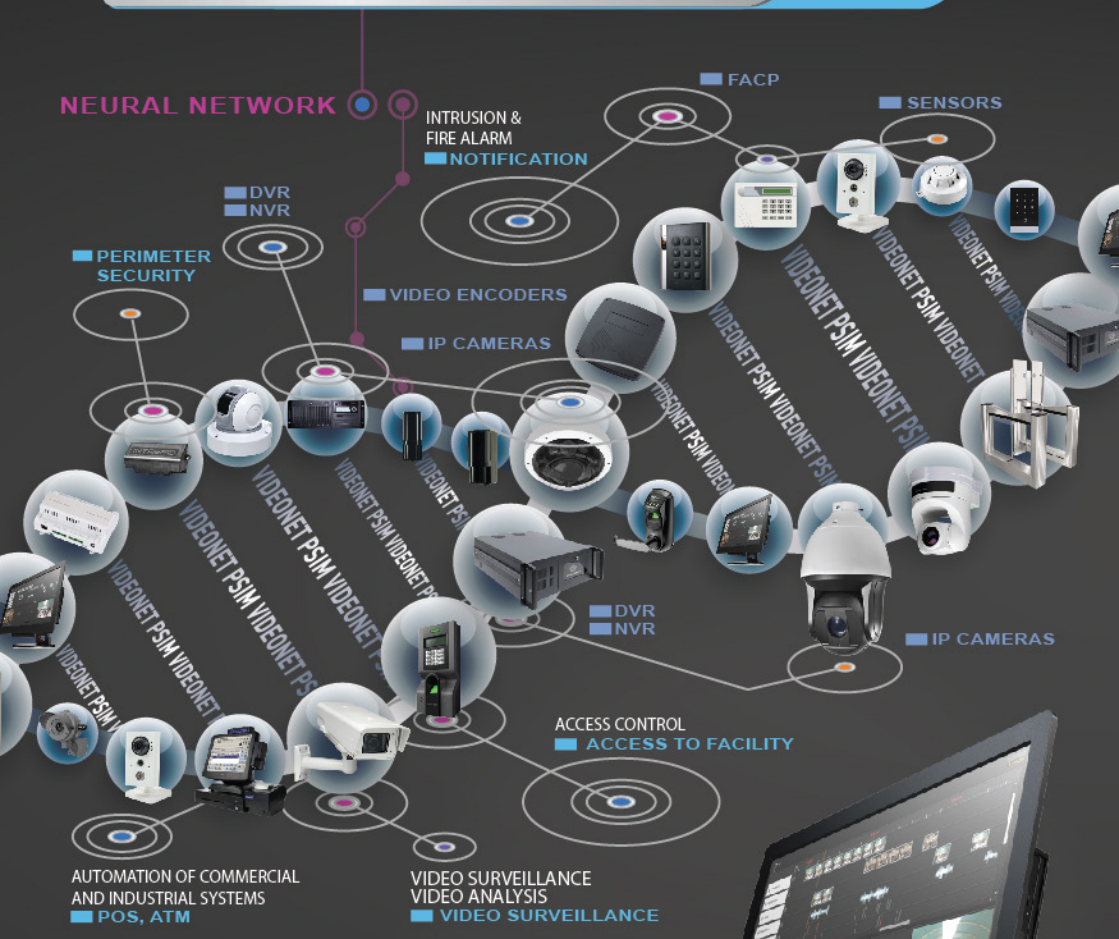


NEURAL NETWORK



INSTALLATION MANUAL

VideoNet 9.1
SERVICE PACK 10



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VideoNet 9.1 SP10

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CONTENTS

1. TECHNICAL REQUIREMENTS TO THE SYSTEM	3
2. ACTIONS SEQUENCE DURING VIDEONET INSTALLATION	5
3. SOFTWARE INSTALLATION	6
3.1. Initial software installation	6
3.1.1. VideoNet Autostart Service.....	15
3.1.2. Tevian face recognition module installation	16
3.1.3. CUDA libraries and neural networks installation	18
3.2. Archive configuration parameters	22
3.3. Windows user rights.....	25
3.4. Interaction of the VideoNet 9.1 with the older VideoNet systems	25
3.5. Software updating	26
3.6. Security of the VideoNet system	26
3.7. Software removal	27

1. TECHNICAL REQUIREMENTS TO THE SYSTEM

Hardware and software requirements for the computer on which the **VideoNet** system will be installed are as follows:

CPU	64-bit Minimum: Intel Core i3-530 processor Recommended CPU parameters depend on the required number of connected cameras.
RAM	Minimum 4 GB. Recommended: <ul style="list-style-type: none">• 8 GB for systems with up to 16 cameras;• 16 GB for systems with up from 16 cameras to 48 cameras;• 32 GB for systems with over 48 cameras. Attention! When you use video capture cards, the PAE mode must be disabled. Attention! Pre-recording requires additional RAM size (see Section 3.2.6 of the User guide). Attention! Additional RAM is required to use face recognition (see section 3.4.3.2 of the User guide).
Operating system (64 bit)	Microsoft Windows Server 2016 (versions 1709 and higher); Microsoft Windows Server 2019; Microsoft Windows Server 2022; Microsoft Windows 10 Home/Pro/Enterprise (versions 1903 and higher); Microsoft Windows 11 Home/Pro.
Graphics card	Minimum: OS-determined (128 MB, DirectX 11 support) Note: To select the graphics card chipset manufacturer, it is recommended to use the list of tested equipment .
Display	Minimum: 1280x1024
File system	NTFS; it is recommended to use a 64 KB cluster size for formatting the disks on which video archive volume files are placed. Attention! Other file systems are not supported. Note: It is recommended to disable the system recovery feature on logical disks on which video archive volume files are placed. Note: When using RAID controllers, it is recommended to install the Battery BackUp Unit and enable the Write Back Cache function.
Database Management Systems Used	Microsoft SQL Server 2008; Microsoft SQL Server 2008 R2; Microsoft SQL Server 2012; Microsoft SQL Server 2014; Microsoft SQL Server 2016; Microsoft SQL Server 2019 Express.



Attention! Starting resource-intensive applications on the same computer may adversely affect the **VideoNet** system's performance. It is not recommended to install third-party applications, other than those which are part of Windows, on this computer.



Attention! When using detectors and/or recognition modules, the technical requirements for a computer may differ from those stated in this section. To clarify the requirements, contact the SKYROS Corporation for consultation.



Attention! Antivirus software that automatically scans files on the computer can significantly reduce the system's recording and playback performance. In case of using such software, it is recommended to (depending on available settings):

- disable the check of volume files (.vnsd);

- disable the check of all files, leaving only the check of program files;
- disable the check of the disks on which volume files are located;
- disable automatic check for all disks.



Attention! When working with **VideoNet** system, it is necessary to use a 64-bit operating system.



Attention! It is not recommended to use Punto Switcher when you work with **VideoNet**.



Attention! It is not recommended to install or remove third-party software, as well as Windows updates, during the installation process of the **VideoNet** system.



To learn more about the hardware requirements for your VideoNet surveillance solutions, you can use a calculator on the website <http://www.videonet9.com>.

2. ACTIONS SEQUENCE DURING VIDEONET INSTALLATION

To install VideoNet system it is necessary to perform the following actions:

1. Switch off your computer.
2. Install **TinyVN4 Pro2**, **TinyVN4 Pro3**, **PowerVN4 Pro2**, **PowerVN4 Pro3**, **PowerVN4 Pro4**, **PowerVN4/8-AHDM**, **PowerVN8**, **PowerVN8-HD**, **PowerVN8-HD2**, **TitanVN8 Pro** or **TitanVN16** video capture cards. Install if necessary additional video/audio inputs panels or additional panels for working with relay outputs and alarm sensors. Connect also necessary executive devices.
3. Switch on your computer.
4. Close all standard add new hardware wizards of the Windows operating system.
5. Launch **VideoNet** Installation wizard (see section 3).
6. Make sure you have the license key on your computer when the Installation wizard asks you to do so. The **VideoNet** system supports HASP (hardware) and Guardant (hardware and software) license keys.
7. Restart your computer after completing the installation process.

3. SOFTWARE INSTALLATION

3.1. INITIAL SOFTWARE INSTALLATION

To install VideoNet system software from SKYROS-VideoNet CD:

1. Before **VideoNet** software installation it's necessary to close all the Windows standard hardware update wizards.



VideoNet installation program installs drivers for video/audio capture cards automatically. **Do not install drivers by other means.**



Attention! If Windows 10 version 1607 or higher or Windows Server 2016 or 2019 is installed on the computer on which you plan to use **video/audio capture cards**, then before starting **VideoNet** installation, it is recommended to disable Secure Boot (UEFI) mode in the computer BIOS for correct driver installation. When installing **VideoNet** with **Secure Boot (UEFI)** enabled, you may encounter errors related to the verification of digital signatures of drivers.



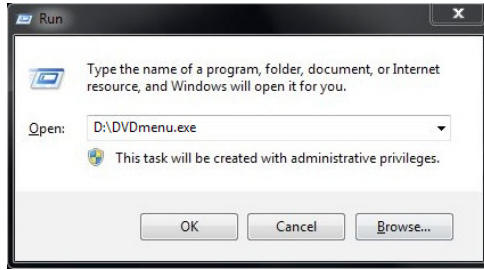
Attention! If you will run with fire alarm devices, make sure that the **rusian** language has been selected by default for non-Unicode programs (**Start -> Control Panel -> Region and Language -> Administrative -> Language for non-Unicode programs**) before installing the **VideoNet** system.

2. Insert the installation CD into your CD-ROM drive.



If Windows runs installation program automatically, proceed immediately to the *step 6*.

3. Select **Run** item in the **Start** menu.
4. Dialogue box will be opened.

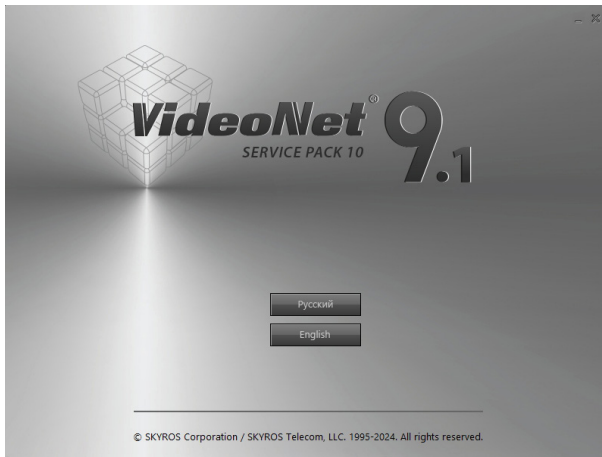


5. Enter **D:\DVDmenu.exe** in the **Open** edit box to open the Installation wizard.



Attention! If CD-ROM has another drive-letter on your computer, then change **D** to a corresponding letter.

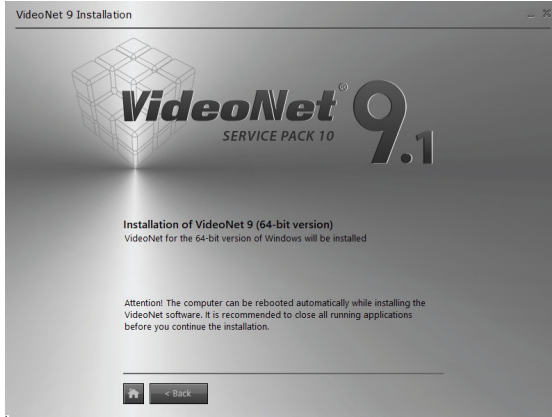
6. On this page select the language to be used during the installation process.



7. Click **VideoNet 9 Installation**.



8. On this stage the application will detect the capacity of your operating system. Click the corresponding string in the middle of the page.



The installation application will check for the user rights to install the **VideoNet**, presence of a **VideoNet** license key, check for versions. It will also calculate the available disc space to install additional software. If some of the conditions will not be met, the application will inform the user about it. If any additional software have not previously installed on your computer, the installation application will prompt you to install it. It is recommended that you close all other application before installing.



Attention! It is recommended to add the **VideoNet** installer file to the exceptions of your antivirus.



Attention! Your computer can be automatically restarted to complete the installation of additional software.



Attention! If the **Core isolation** feature is enabled in the computer's operating system, then the installation of **Guardant** drivers is not performed.

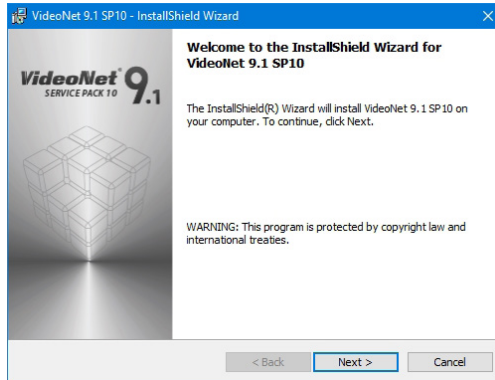


If you encounter errors during the installation of the **Microsoft Visual C++ Redistributables**, we recommend that you update **Windows**, restart your computer, and then reinstall the components.

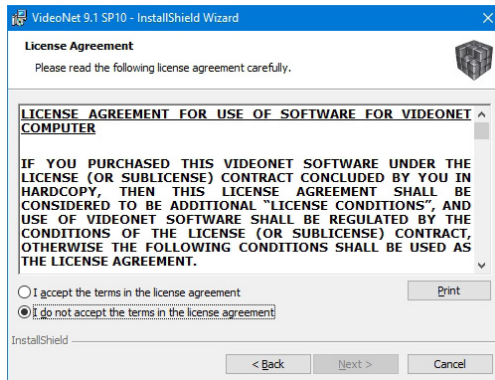


The required amount of disk space for installing **VideoNet** depends on the type of installation and the configured restrictions on the size of the databases. When installing with standard settings, it is recommended to reserve at least 25 GB of disk space.

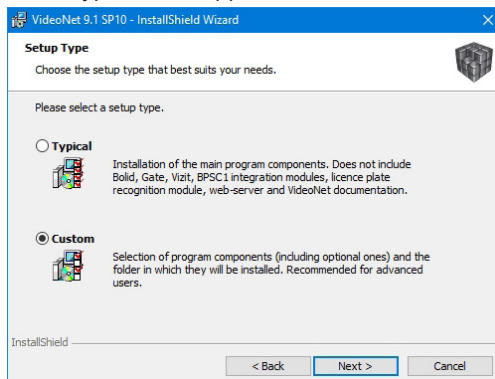
9. The VideoNet Installation Wizard opens. Click **Next**.



10. The License Agreement opens. Please, read the License Agreement, select the **I do not accept the terms and conditions of the Agreement** and click **Cancel** to exit the Wizard. If you agree with the terms and conditions of this Agreement, select the **I accept the terms and conditions of the Agreement** and click **Next**.



11. Select installation type for the application and click **Next**.



If you choose **Typical** installation, then common application components will be installed.
If you choose **Custom** installation, then you will be able to select application

components for installation.



Attention! When you select the **Standard** installation following functions will be unavailable on this computer:

- working with Bolid, Gate, Vizit devices and BPS banknote counting machines;
- licence plate recognition;
- working with VideoNet system via web access.

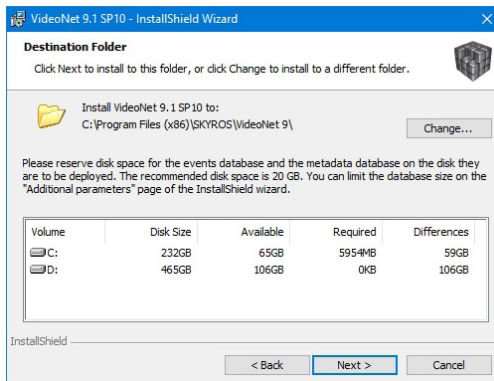
Also, the VideoNet documentation will not be installed.

If you need the above components, select **Custom** installation.

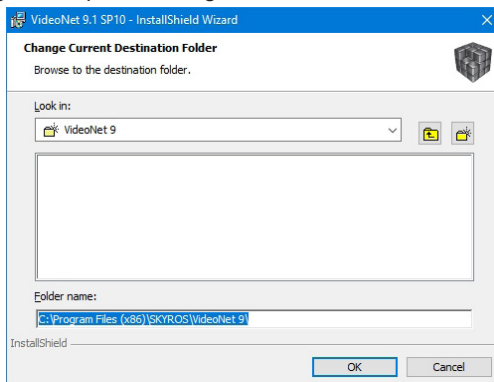
12. If you selected **Typical** installation on the previous stage, a page with a path to installation folder will open. By default installation folder resides at **C:\Program Files (x86)\SKYROS\VideoNet 9**.




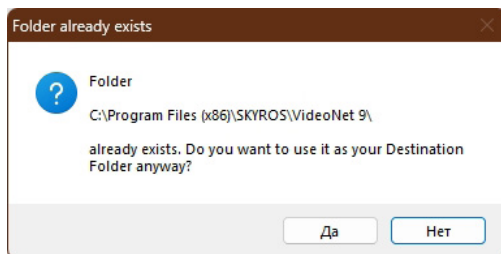
Attention! The **VideoNet** installation folder must be added to the antivirus exceptions.



You can select some other existing path for the VideoNet installation or create a new one. Click **Change...** to open a dialog window.

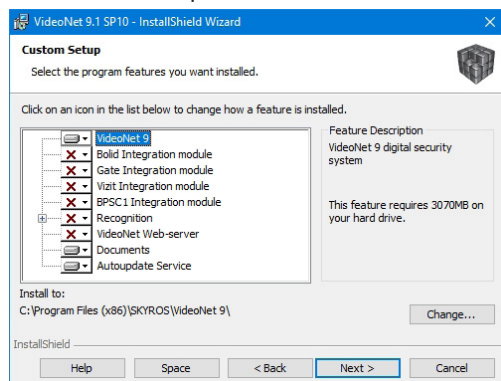


Specify path to the required folder or click  button to create a new folder. Name a folder and click **OK** to close the window. To proceed with installation, click **Next**. If the **VideoNet** installation folder already exists, the dialog window opens.



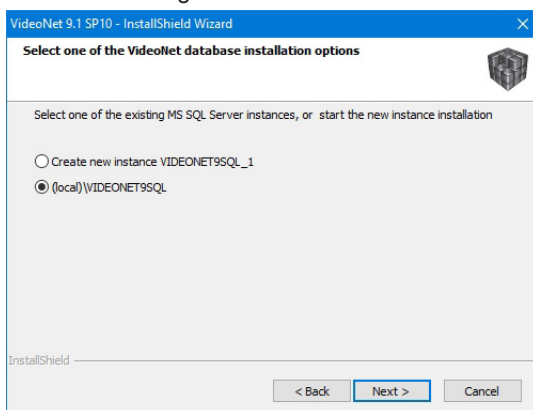
Click **Yes** to confirm the path and to go to the next stage.

If you selected **Custom** installation on the previous stage, a page with the list of components for selection and a path to the installation folder will open.

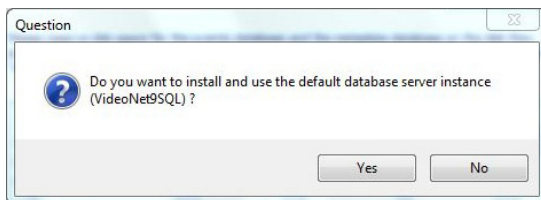


Click **Space** button to receive information about the required and available disc space. To continue, click **Next**.

13. All the configuration information of the VideoNet 9 is stored in the Microsoft SQL database. On the page for choosing a **VideoNet** database installation option select the **Create new database** option to create a new database server, or select one of the existing servers to be used with VideoNet. Click **Next**.

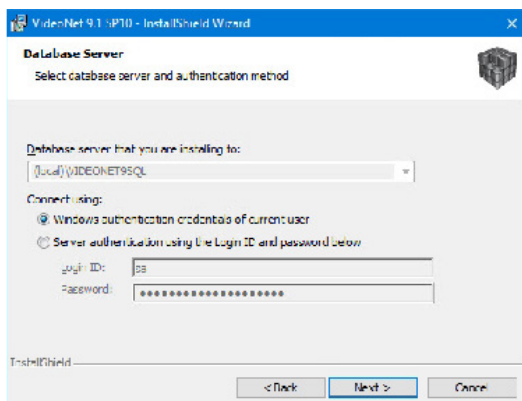


If you choose **Create new database** option, a dialog window opens where you can confirm the creation of the new database server with the default parameters.



Click **Yes** to start the installation process. Click **No** to return to the previous page. If some other application uses 1433 port that is usually used by default by database server, you can select a different port.

If one of the existing databases is selected during the installation process, then the **Database Server** page will open. Select the way to access the database server and click **Next**.



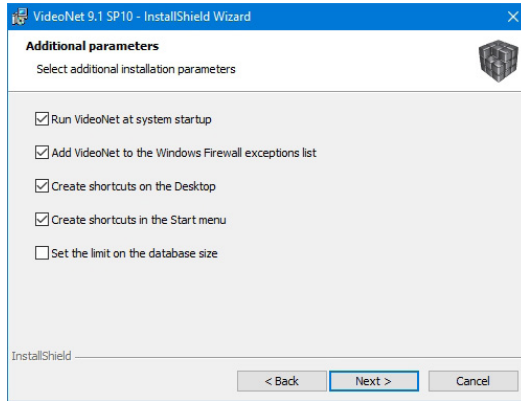
14. Additional Parameters page opens. On this stage you should select additional installation parameters to be used with VideoNet 9 installation.

Select **Run VideoNet at system start up** to start the **VideoNet** automatically each time the operating system starts.

Select **Add VideoNet to Windows firewall exceptions list** to add the VideoNet to the exceptions list of the Windows firewall.

Select **Create shortcuts on the Desktop** or **Create shortcuts in the Start menu** to create corresponding shortcuts.

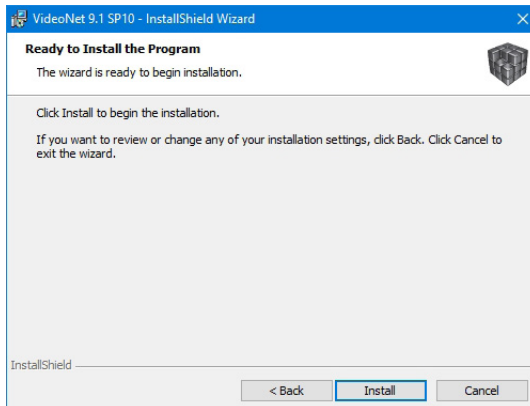
On this page you can also limit the size of the Events, Metadata, licence plates, faces and trading systems databases by specifying the required values in the corresponding fields. Click **Next** to continue.



After you install **VideoNet** system, you can limit the size of the log database Microsoft SQL. For this:

1. Open the **SQL Server Management Studio**.
2. On the **Object Explorer**, click **Databases** node and select the desired **database**.
3. Right-click on the database name to bring up the context menu. Select **Properties**.
4. Select **Files** page in the window.
5. Specify the required file size of the log database and click **OK**.
6. Repeat steps 2-5 for the other databases.

15. A page with the information about the readiness to the VideoNet 9 installation opens. Click **Install**.



When the new database server is created, this step is skipped and the VideoNet installation begins.



Attention! If you install **VideoNet Web Server**, turn off the User Account Control (UAC) in *User Accounts settings*.

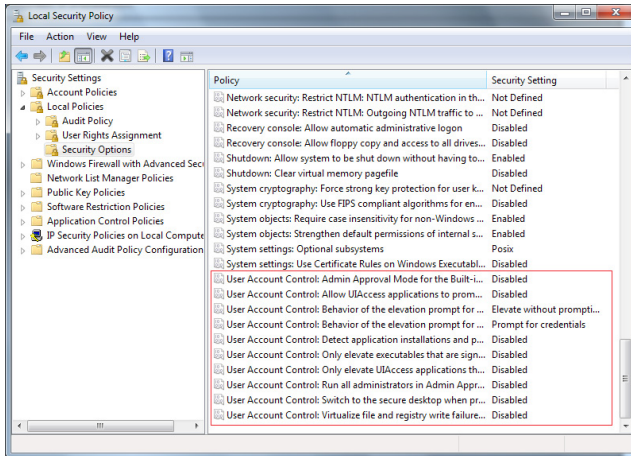
During installation, the installation program will require you to install a license key if you have not done so before installation. The license key is installed in the USB port of the computer. Key drivers will be installed automatically.

If due to the malfunction of the Microsoft Windows Update the following error emerges during the VideoNet installation: «*Net Framework 4.0 installation is performed with an error. Continue installation?*», and the VideoNet does not start, the following algorithm can be used:

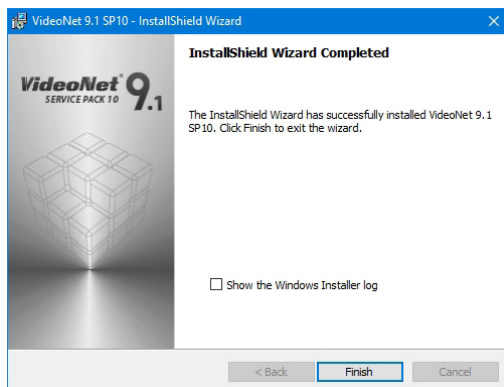
1. Stop the following Windows services: Windows Update Center, Windows Security Center, Background Intellectual Transfer System.
2. Rename or delete the **Software Distribution** folder residing in the Windows folder.
3. Restart the Windows services that were stopped on the first stage.
4. Restart the VideoNet installation.

If the «*Cannot install VideoNet Supervisor*» error emerges, it is recommended to change security parameters temporarily:

1. Close the VideoNet Installation Wizard.
2. Open the **Local Security Policy** window (**Start -> Control Panel -> Administration**).
3. Open **Local policies -> Security parameters**.
4. Select the parameters as it is displayed on the picture below.



5. Reboot the computer.
 6. Restart the VideoNet Installation Wizard.
16. After the installation process finishes, the final page of the Installation Wizard opens. Click **Finish**, and then click **Yes** to reboot.



3.1.1. VideoNet Autostart Service

The VideoNet system allows for automatic start of the VideoNet after the operating system loads. Autostart service controls VideoNet operation on the program level. To monitor computer on the hardware level, you can use Watchdog timers on the following video capture cards: Tiny VN4 Pro3, the entire family of Power cards and Titan cards.

To start the VideoNet autostart service, do the following:

1. Open the VideoNet installation folder. By default this folder is located at **C:\Program Files (x86)\SKYROS\VideoNet 9**.
2. In this folder, open the **Services** subfolder.
3. Start the **Autostart VideoNet after the Windows startup.Ink** application.

To open the VideoNet autostart service, do the following:

1. Open the VideoNet installation folder. By default this folder is located at **C:\Program Files (x86)\SKYROS\VideoNet 9**.
2. In this folder, open the **Services** subfolder.
3. Start the **Cancel the VideoNet autostart after the Windows startup.Ink** application.



Attention! If the VideoNet system was started using the VideoNet autostart service, then you must close the VideoNet before you exit the Windows.

3.1.2. Tevian face recognition module installation

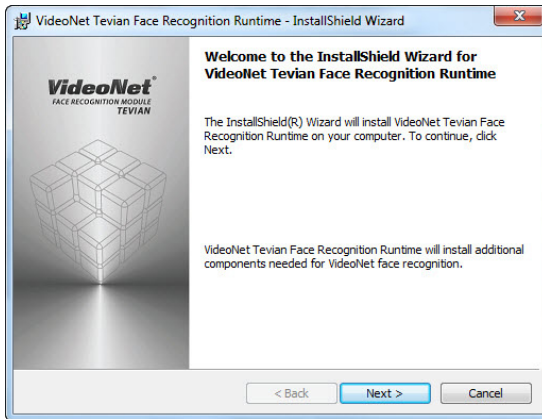
VideoNet system allows you to recognize human faces. To enable this, you must install a Tevian face recognition module. Installation is required to be carried out directly on the computer to which you plan to connect cameras that perform facial recognition.



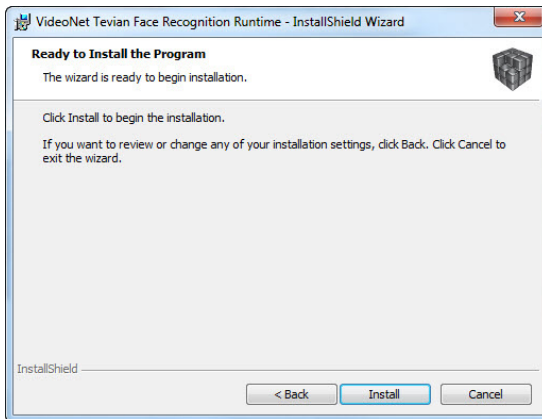
You can download the installer of the Tevian face recognition module at <http://www.videonet9.com>.

To install Tevian face recognition module:

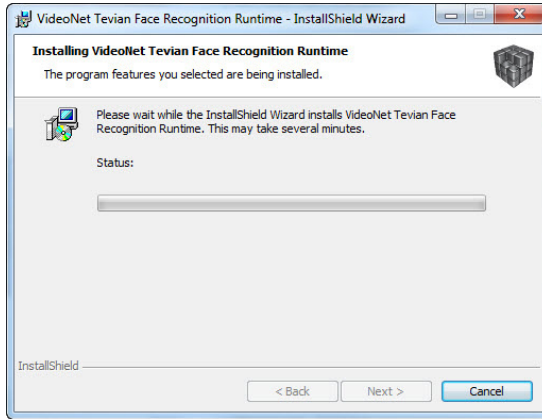
1. Run the installer. Select installation language.
2. The installer window will be opened. Click **Next**.



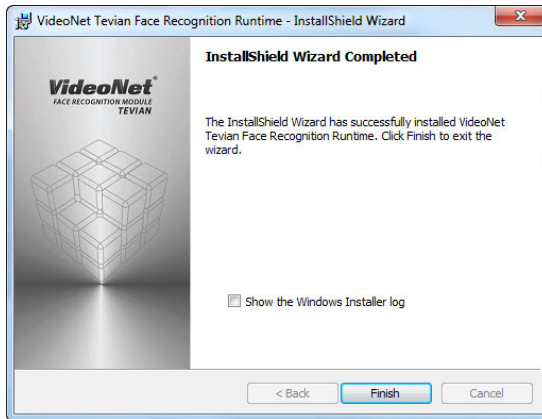
3. At the next stage, the program will be ready to start the installation. To do this, click **Install**.



4. Installation of the Tevian Face Recognition Module will begin.



5. After the installation process is completed, the installer completion page will be opened. Click **Finish**.



3.1.3. CUDA libraries and neural networks installation

The **VideoNet** system allows you to detect various types of objects using a recognition algorithm based on convolutional neural networks. To provide this possibility, it is necessary to install CUDA libraries and a neural network on a computer with the **VideoNet** system. The installation must be carried out directly on the computer to which the cameras planned to be used for object detection are connected.



Attention! Before you begin installation, make sure your computer meets the following hardware and software specifications:

Graphics card

Architecture: Pascal or later (for example, video cards of the GeForce 10 Series family and newer);
Video memory: at least 4 GB (the required volume depends on the neural networks used and their quantity);
Drivers: 378.49 WHQL versions or newer;
CUDA technology version: 6.0 or newer;
Memory bus width: 128 bits or more.

Operating system 64 bit

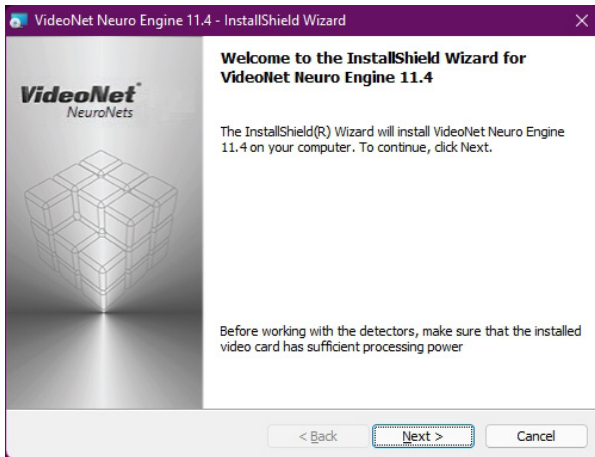
Before installing neural networks, you need to install CUDA libraries on your computer.



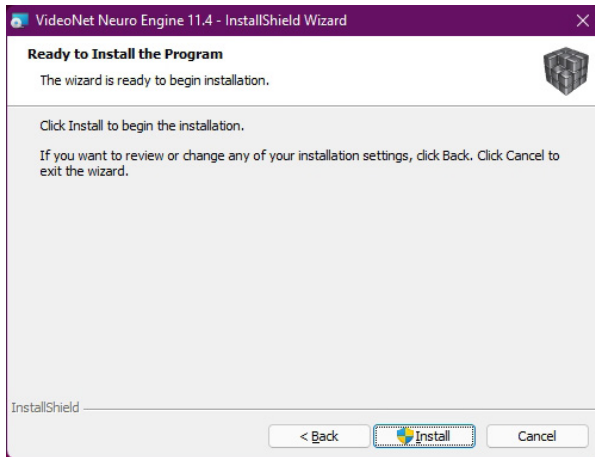
You can download CUDA libraries installer **VideoNet Neuro Engine** at <http://www.videonet9.com>.

To install CUDA libraries:

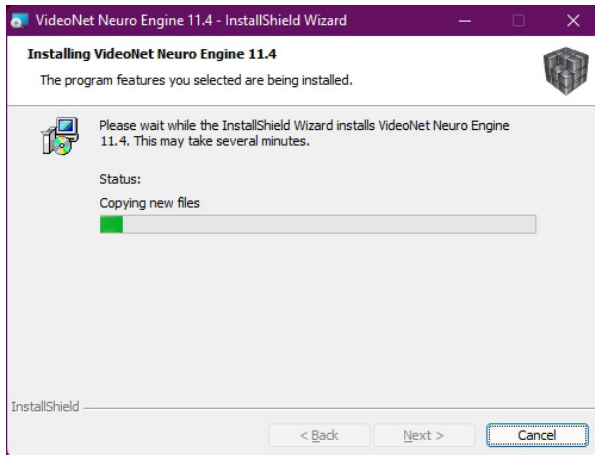
1. Run the CUDA libraries installer **VideoNet Neuro Engine**. Select installation language.
2. The installer window will be opened. Click **Next**.



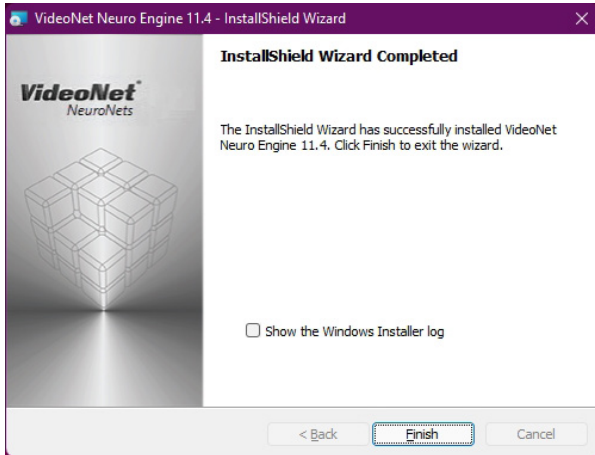
3. At the next stage, the program will be ready to start the installation. To do this, click **Install**.



4. Installation of the CUDA libraries will begin.



5. After the installation process is completed, the installer completion page will be opened. Click **Finish**.



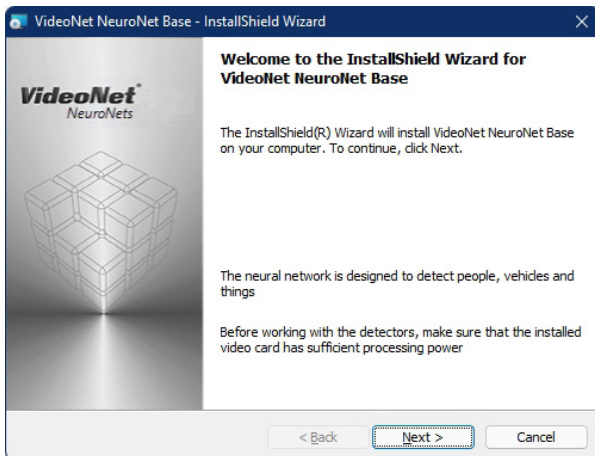
After installing CUDA libraries on your computer, you need to install neural networks.



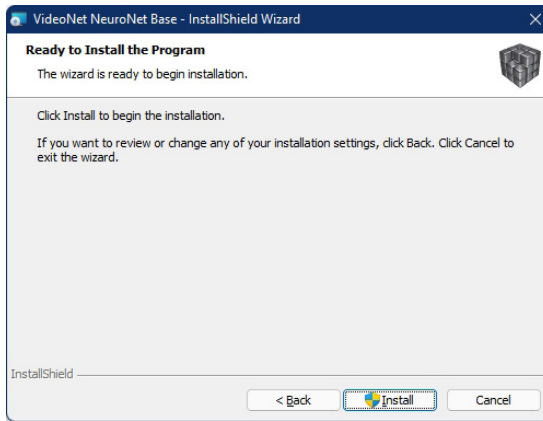
A separate installer is provided for each neural network. You can download neural network installers at <http://www.videonet9.com>.

To install a neural network:

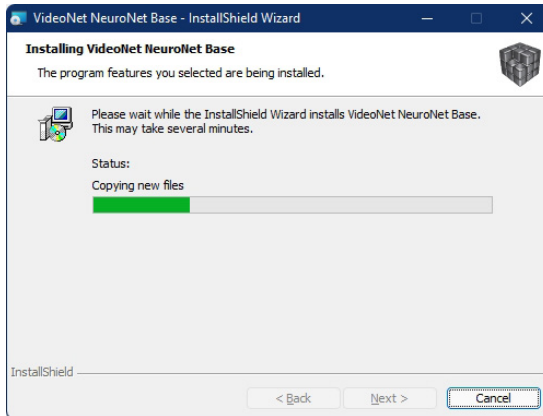
1. Run the installer for the required neural network. Select installation language.
2. The installer window will be opened. Click **Next**.



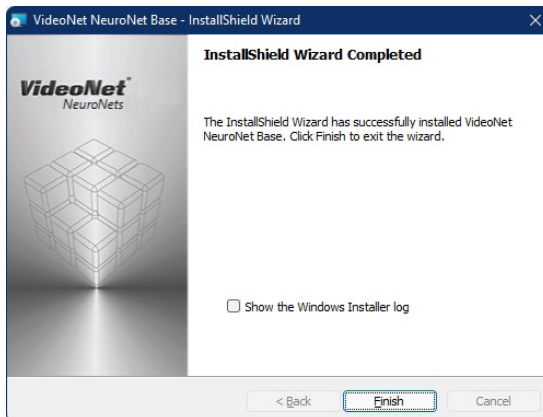
3. At the next stage, the program will be ready to start the installation. To do this, click **Install**.



4. Installation of the neural network will begin. The program will install several versions of the neural network, requiring different amounts of video memory for operation, on the computer.



5. After the installation process is completed, the installer completion page will be opened. Click **Finish**.

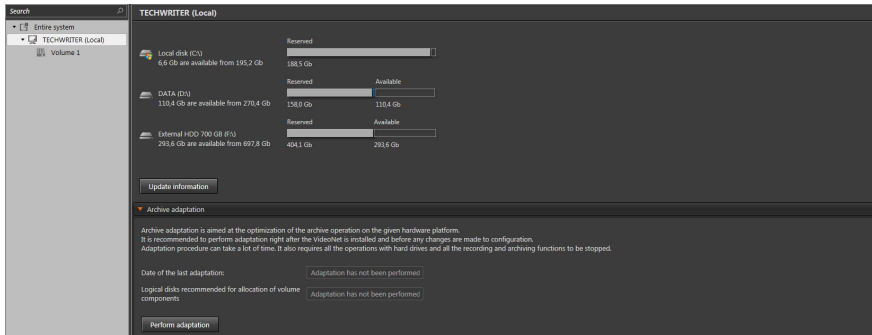


3.2. ARCHIVE CONFIGURATION PARAMETERS

After you have installed the **VideoNet** system, you must perform an adaptation of the video and audio archive to the hardware platform of your computer. During the adaptation process the **VideoNet** parameters will be optimized to enable fast recording of data to the disk.

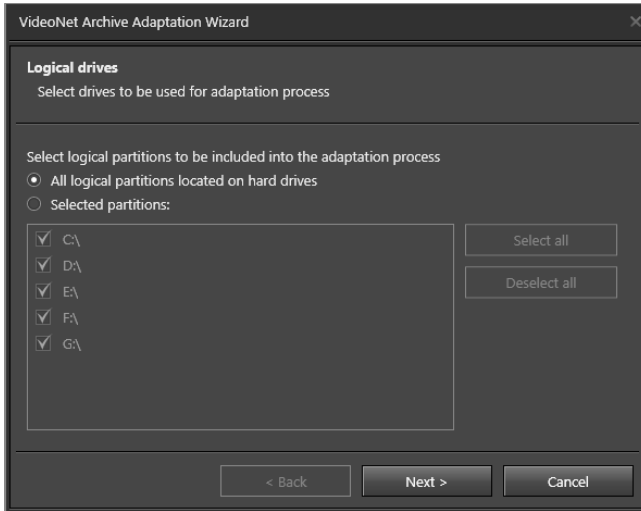
To adapt an archive, do the following:

1. Start the Configuration environment of the VideoNet system and open the Archive page in the Recording group of pages.
2. In the element tree select the local computer.
3. On the computer properties page open the Archive Adaptation tab.



This tab contains the fields with information on the date of the last archive adaptation and the list of logical discs that are recommended for archive allocation. In the list of recommended partitions, all the local logical discs are displayed, including the fastest logical disc and all the discs which performance is no more than 20% lower. If all the discs have an equal performance parameters, then the field will have the «Any hard disc» value.

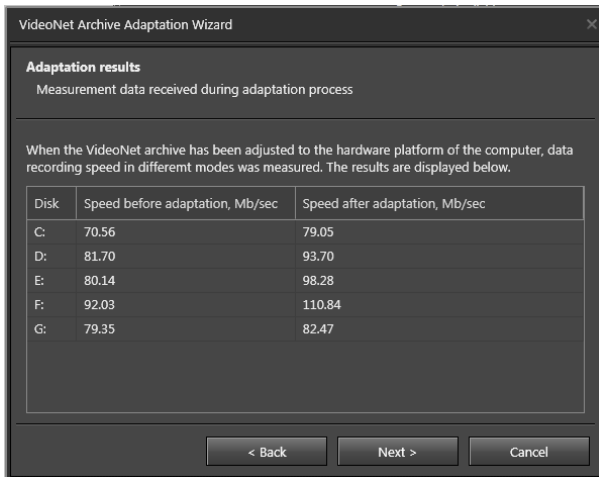
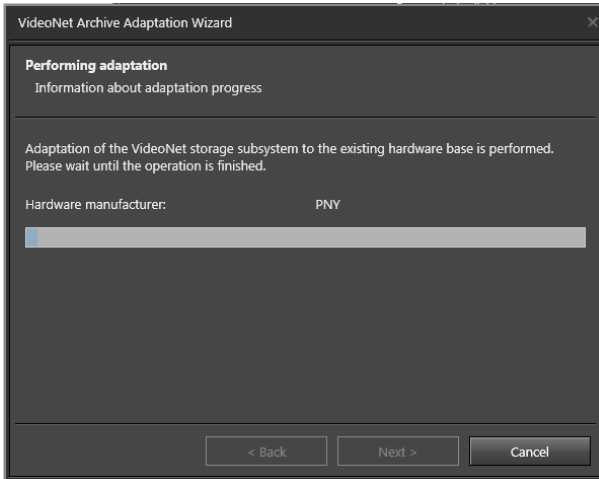
4. Click Perform adaptation button.
5. The VideoNet Archive Adaptation Wizard opens. You will see the list of logical discs for which the performance metrics will be sampled. By default all the discs in the list will be selected. You can remove the flags from those discs you do not want to use for VideoNet archive allocation.



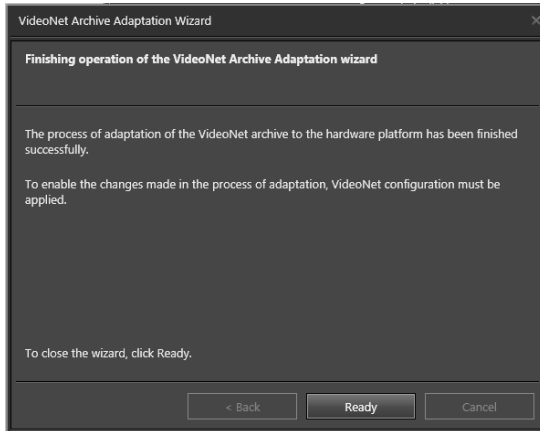
6. On the following page, you will see a list of restrictions on the disk operation during the adaptation, which may affect its correctness, if not observed. Also, this page specifies the requirement for free disk space which the system needs for test recording. To start adaptation, click **Next**.



7. Once adaptation process has been completed, you are able to see speed measurement results for all local disks available in the system. The table provides the rates of recording to the disks before and after adaptation. To go to the following step, click Next.



8. The Close VideoNet Archive Adaptation Wizard page will open, offering you to click the **Ready** button. At this stage, you will not be able to go back to the previous step or cancel the Wizard operation.



Once the Wizard has been closed, the values of the last adaptation time and the list of recommended logical disks will update. The changes in **VideoNet's** modes of operation with controllers will come into effect after you click the **Apply** button on the configuration control panel.



The **VideoNet** system measures the performance of local fixed disks only. Logical partitions located on USB drives will not be displayed in the measurement results window.



If some system failure or error occurs (e.g. no free space on one of the disks) during adaptation, the adaptation process will be interrupted.

3.3. WINDOWS USER RIGHTS

When the **VideoNet** is installed, the **VNGroup** user group is created among the Windows user groups. **VNGroup** users are granted the right to start the **VideoNet**. All the users from the **Administrator** user group are added to the **VNGroup** by default. System administrator can add additional users to this group. Please note that each user of the operating system that has the right to start windows services also has the right to start and stop the **VideoNet** service. But if he wants to start or stop **VideoNet** environments, he must be added to the **VNGroup**.

3.4. INTERACTION OF THE VIDEO NET 9.1 WITH THE OLDER VIDEO NET SYSTEMS

VideoNet 9.1 SP10 can be installed on a computer where **VideoNet 8.9 SP3** and earlier versions of the system are already used. However, simultaneous launch of **VideoNet 9.1 SP10** and **VideoNet 8.9 SP3** (and earlier system versions) is impossible.

During the installation of **VideoNet 9.1 SP10**, earlier versions of **VideoNet 9** (up to **VideoNet 9.0**) will be automatically removed from this computer.

3.5. SOFTWARE UPDATING

To update VideoNet software, it is necessary to install the corresponding updating package on your computer.

If you have several computers united in one **VideoNet** network, it is necessary to install the package on every computer of your network to update the system. To update the system, it is recommended to perform the following steps:

1. Make sure that the license key supports new software. To do this, contact technical support.
2. Create a backup copy of the data (refer to the chapter **8 of the User guide** for more details).
3. Shut down **VideoNet**.
4. Run the VideoNet installation program and follow the instructions of the wizard.
5. Restart your computer after completing the installation process.

3.6. SECURITY OF THE VIDEO NET SYSTEM

To prevent unauthorized access to the VideoNet database please remember the following:

1. If you are installing a new Microsoft SQL database, only a certain group of people should know the password for the database administrator. The password should be difficult.

2. If the Microsoft SQL server database is already installed on your computer, you need to use a strong password to access the database. Make sure that unauthorized access to the database is not possible using Windows authentication.

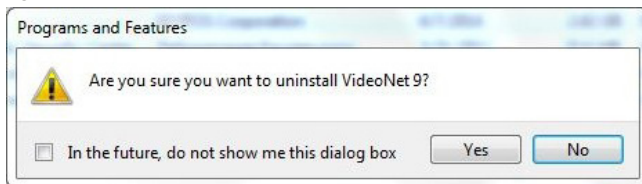
3. Open the **SQL Server Management Studio**. On the **Object Explorer**, click **Security -> Logins**. Make sure that:

- there are only logins of trusted users;
- the role of **sysadmin** is selected for Microsoft SQL database administrators on the **Server Roles** page in the **Login Properties**;
- the VideoNet databases (VNConfig, VNEvent, VNTemp, VNVideoMD, VNPos, VNFace) are selected only for the login **vnuser** and logins that have the role of **sysadmin** on the **User Mapping** page in the **Login Properties**.

3.7. SOFTWARE REMOVAL

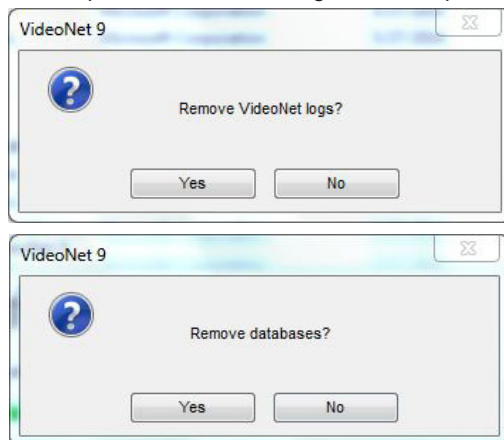
To remove the VideoNet software, do the following:

1. Stop the VideoNet autostart service (refer to the section [3.1.1](#))
2. On the **Control Panel** select **Add/Remove Programs ->VideoNet 9**.
3. Click **Remove**.
4. A dialog window opens.



Click **Yes** to confirm the removal of the **VideoNet**.

5. During the removal process several dialog windows open.



Click **Yes** if you want to remove Event Log or the VideoNet database.



Attention! If you want to install the localized version of the **VideoNet** later, you must remove the database..

6. After the removal process finishes, reboot the system.