LENSEC
The Power of Perspective

4/22/2021

How to Install Perspective VMS Version 4.3 (Typical New Configuration)

Over the next few pages, we will review how to install Perspective VMS (Web Server and/or Distributed Services) on various operating systems. Subsequently, specific instructions on "upgrading" an existing Perspective VMS installation is also provided within this document. For each instance of Perspective VMS, there are software prerequisites which may include enabling select server roles and installing an instance of Microsoft SQL Server. Based on a particular installation, these prerequisites may already be installed or installed automatically by the Installer Wizard.

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Software Prerequisites

Operating Systems

The Perspective VMS services platform may be installed onto Windows Server 2016, Windows Server 2019 and desktop versions of Windows 10 Pro Operating Systems. Virtual Machines running the aforementioned operating systems are also supported.

Home, Basic, or IoT versions of Windows 10 can be used for installation and operation but lack features such as Remote Desktop or pre-loaded Internet Information Services (IIS). These versions of Windows hinder general support and troubleshooting. Because of this, these are not recommended. Other legacy versions of Windows, such as Windows 7, Windows XP, Windows Server 2008, Windows Server 2003, Windows Server 2000, and Windows NT are **not supported**. Linux is **not supported** as a server platform for Perspective VMS. If necessary, please contact LENSEC technical support for further details.

People installing Perspective VMS services should have **Administration Rights** to the workstation/server on which they are working. This ensures proper installation and functionality of the services.

IMPORTANT: Make sure to install all pending Microsoft Windows updates. If the updates are not installed, the SQL and PVMS installation could fail.

Database: Microsoft SQL Server 2014/2016/2017/2019 (Express/Standard/Enterprise Editions)
Microsoft SQL Server is the relational database on which Perspective VMS relies to store/retrieve needed information for its operations. Perspective VMS currently supports SQL 2014, 2016, 2017, and 2019 with its various editions: Express, Standard, and Enterprise.

An installation of Perspective VMS can run if SQL is already installed and a Windows or SQL-authenticated user is entered into the installer along with the network path location. If these are not available, or if SQL has not been previously installed, a new instance of SQL is will be installed either on the web server itself or another network accessible computer.

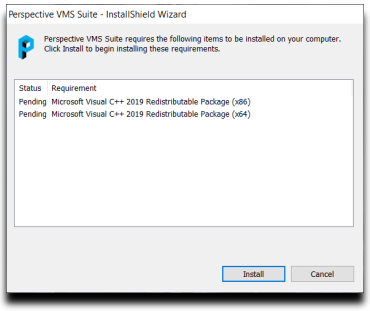
LENSEC provides a copy of **SQL Express** edition in a tools folder on our download page (https://lensec.com/download-tools/). Downloads for 2014, 2016, 2017, and 2019 versions are available. The 2014 version is pre-packaged with SQL Management Studio for database management while later versions require a separate installation package. *Only 64-bit are available from this location, check with your Server or PC to verify which edition is correct for your installation.

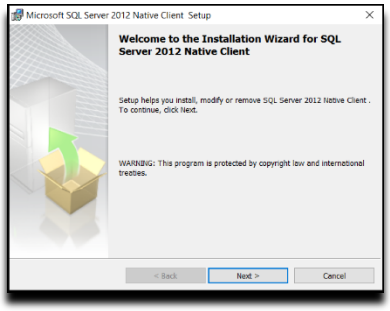
Note: All prerequisites, such as operating system permissions and Windows updates, must be installed prior to running the Perspective VMS Installation.

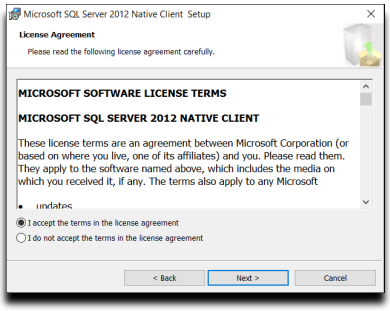
Perspective VMS Installation Wizard

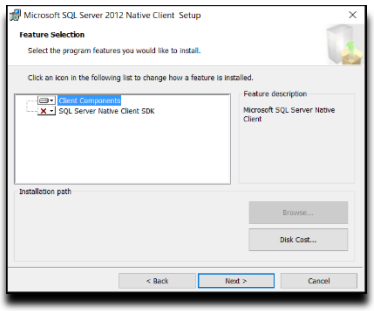
After installing the prerequisites and Windows updates, it is time to install the Perspective VMS Suite. If your server was purchased through LENSEC, look for the PVMS install file **C:/Lensec_Install/**. Confirm it is the latest version by checking our website at lensec.com/download/.

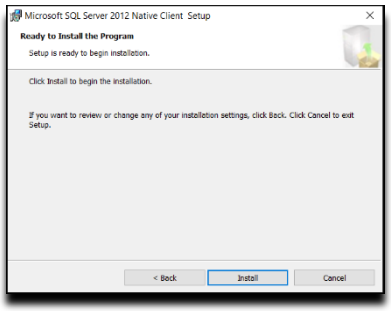
1) Environment Prerequisites: Depending on your environment/server, some files may need to be installed upon launch. You will need to accept this installation to continue (local administration rights are required). Please click 'Next >' on any of these prerequisite windows you may encounter.

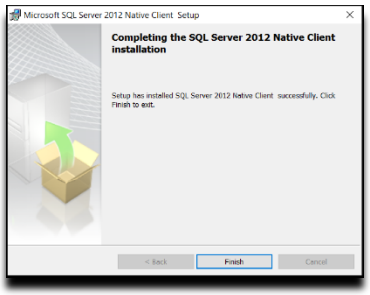




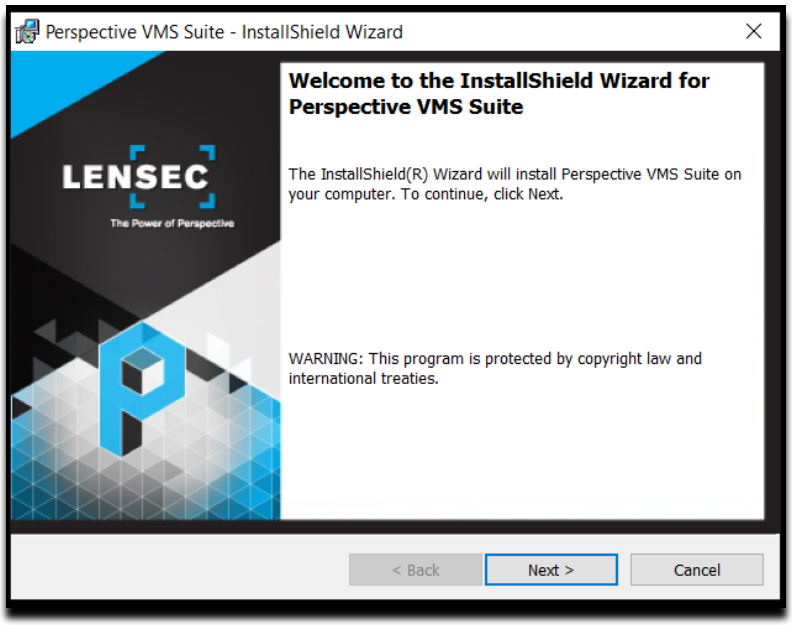




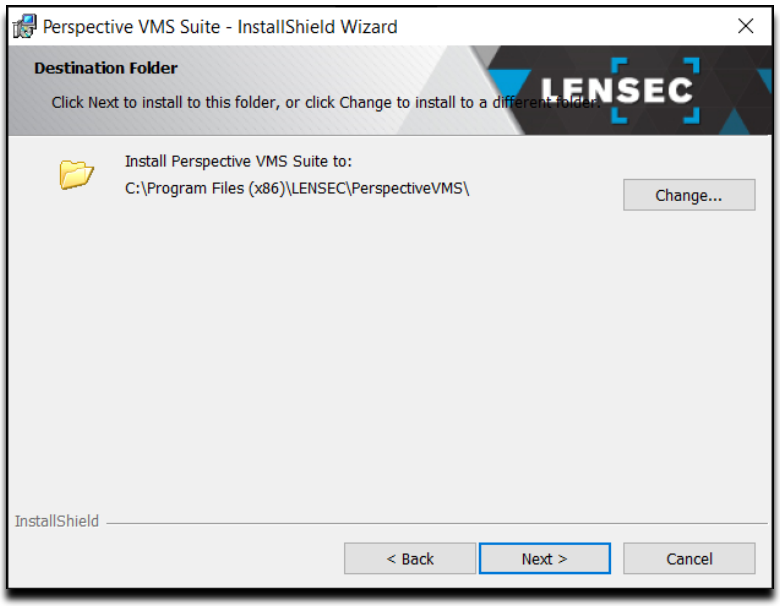




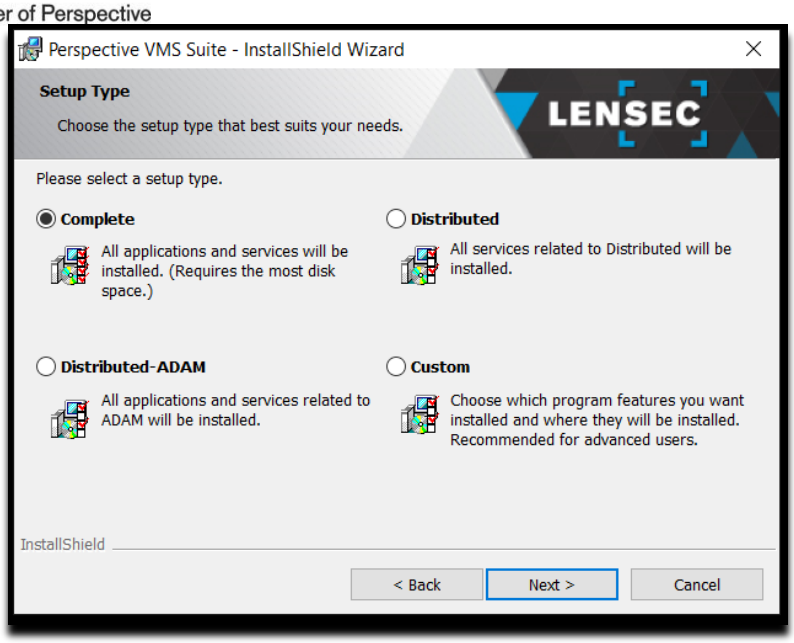
2) Begin PVMS Install Wizard. Click ‘Next >’.



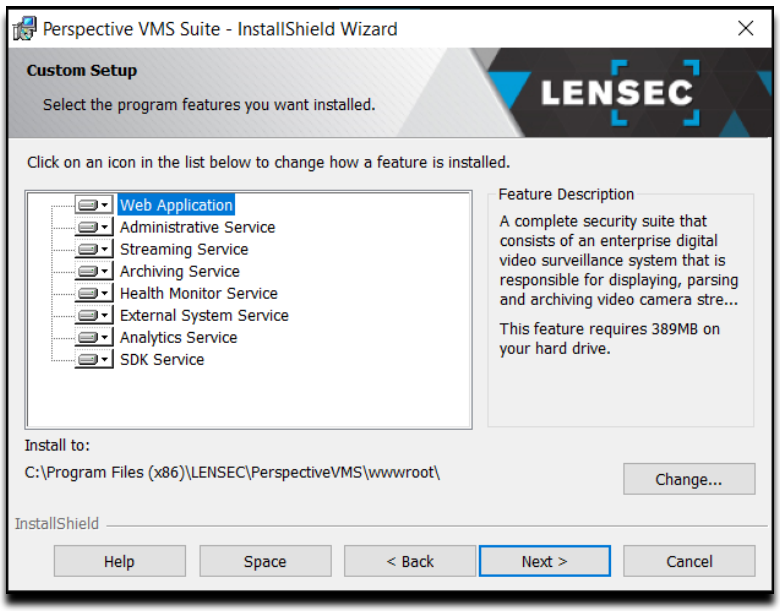
3) Accept (or modify) default path location. Click ‘Next >’.



4) The installation wizard is a self-guided installation shield package that enables the user to install the Complete, Distributed, or Distributed-ADAM packages for distributed servers. Custom installation is available for advanced users who want to install individual components. Select the setup type that is appropriate for your system. Beyond the first screen of the Custom installation, each subsequent screen is identical for these different setup types. Most common installations will be Complete (for a single server) or Distributed (for multiple networked servers). Select your setup type, then click ‘Next >’.



5) This screen is the Custom Setup for Advanced users. Here you can select which Perspective VMS services will be installed. Most of these services are necessary for a stand-alone installation. Click 'Next >'.



PVMS Web Application: The application server component of Perspective VMS. The Web application is responsible for generating the Graphical User Interface (GUI).

PVMS Administration Service: This service monitors and checks drives for the right utilization. It checks how much free space on the drive(s), and subsequently purges old archives or moves them to a different offsite location. It is also responsible for importing and ensuring user synchronization between Active Directory and PVMS.

PVMS Streaming Service: This service acts as an intermediary agent between PVMS and system cameras. It is mainly responsible for handling the streams and passing them to the system. It is also responsible for streaming the archives that are created using the PVMS Archiving Service. The service also provides web-based troubleshooting module which enable system administration to examine active/inactive streams more closely. The troubleshooting module provides the ability to terminate if necessary. The web troubleshooting module can be accessed on the same machine which is running the service by navigating to http://<ServerName>:8090/.

PVMS Archiving Service: The service is mainly responsible for archiving image and video streams from system cameras. The Archiving Service handles image extractions requests from PVMS users and creates archives/extractions accordingly. It also handles live recording requests from PVMS users to capture camera video streams and encode them using H.264/MPEG-4 codec for optimal quality/size.

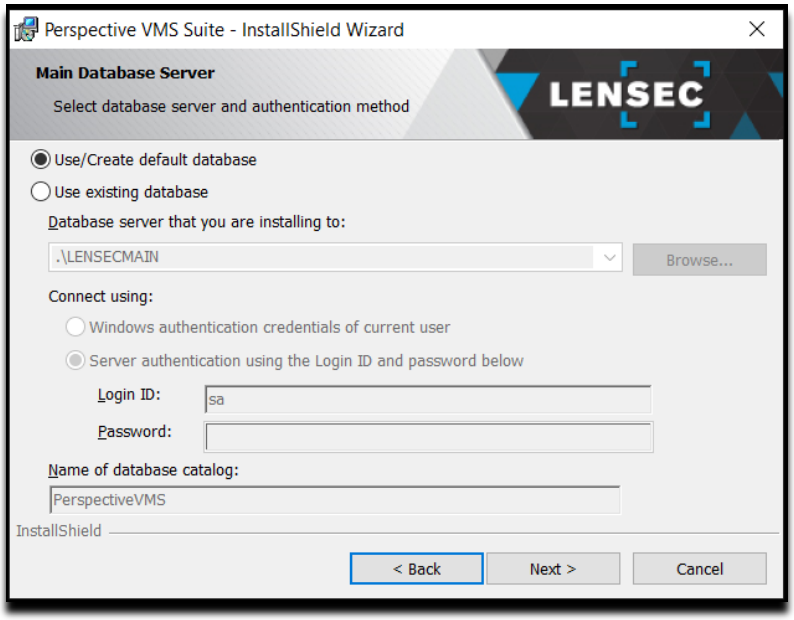
PVMS Health Monitor Service: This service checks if system cameras defined in PVMS are up and running. If not, the service will notify the user about the status of offline cameras. The service also generates health reports related to cameras, servers, and other system components.

PVMS External System Service: This service is installed using a stand-alone, independent package from the main PVMS setup. It acts as an intermediary communication agent between PVMS and 3rd party software/hardware applications.

PVMS Analytics Service: This service is installed if you are using server-side analytics, such as automatic license plate recognition or facial recognition.

PVMS SDK Service: This service allows the interconnectivity between 3rd party devices and PVMS through an API.

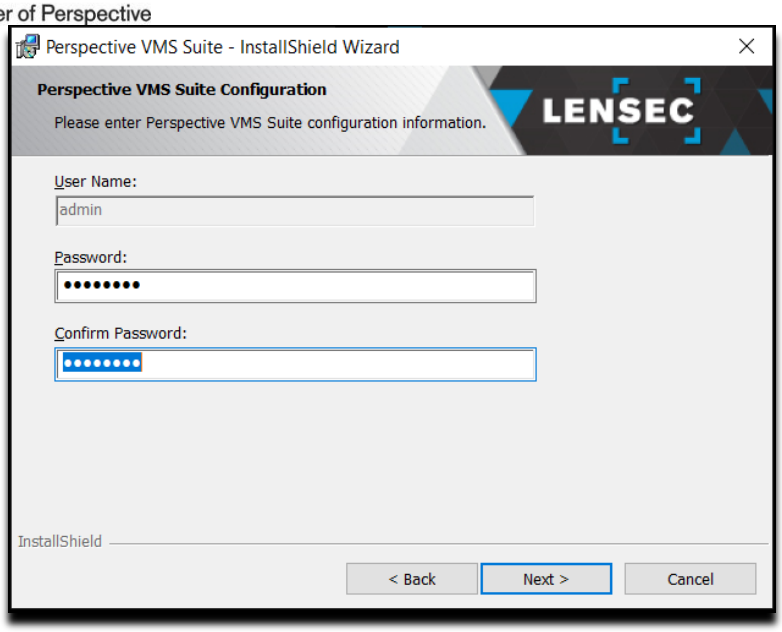
6) Main Database Server:
   (1) If this is a new installation, leave the default "Use/Create default database" selected. Click 'Next >'.
      (a) A SQL database instance will automatically be created with the default name: '.\LENSECMAIN'
      (b) The default password for the Server Authentication 'sa' account is: **L3nSec!@**
   (2) If you are upgrading PVMS and have an existing database,
      (a) Select "Use existing database".
      (b) Make sure the database server is pointing to the correct instance. Choose from the dropdown menu.
      (c) Select "Server authentication using the Login ID and password below". Use the 'sa' account credentials. Click 'Next >'.



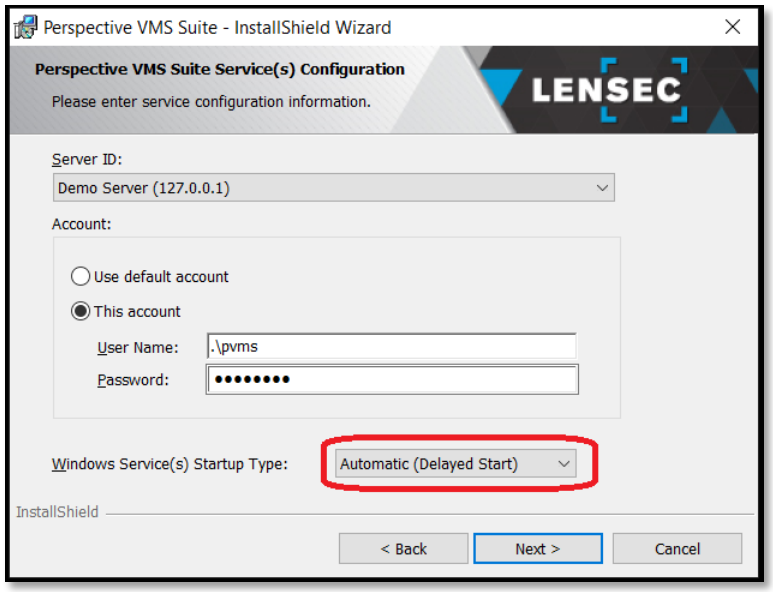
NOTE: The Database Server instance name and password will need to match the instance name provided by the customer or created when installing SQL.

The Database catalog name should remain "Perspective VMS"

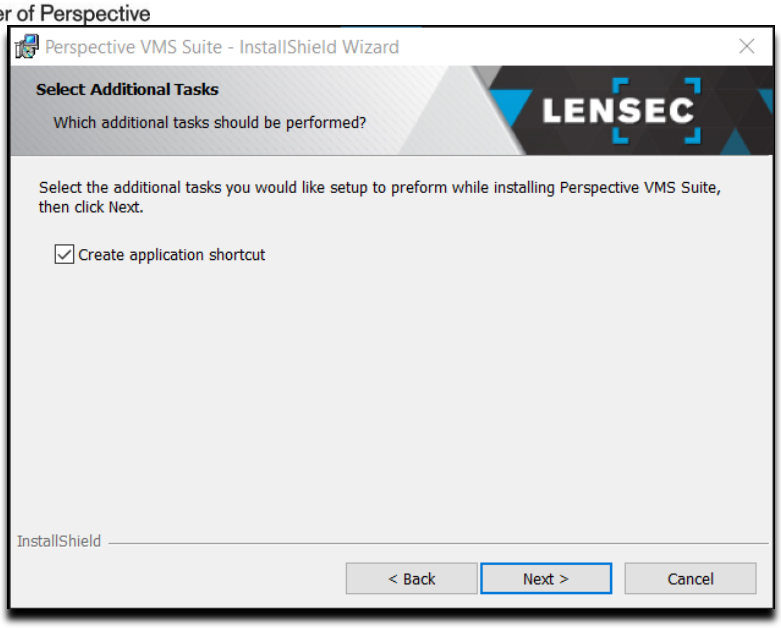
7) Add a default password for the "admin" user of Perspective VMS. This allows the installer to create an initial account with access to Perspective VMS. This is the default login account and should be remembered **(annotated)** for future login to Perspective VMS.



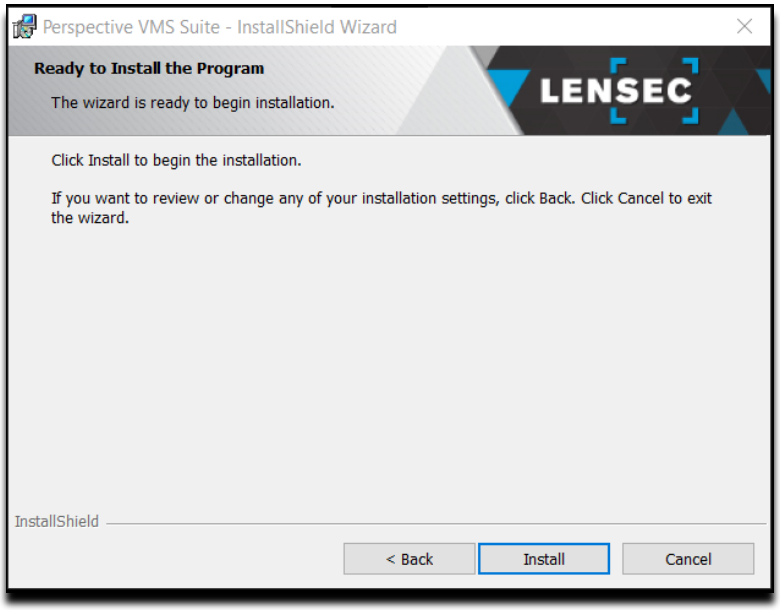
8) Services Administration: As mentioned above during the services installation, Perspective VMS relies on Windows Services running on the Primary, Archiving, or Streaming server(s). These services may be configured upon installation to run under a selected Windows account or the Local System account. Internet Information Services (IIS) are also configured with this user (see below). The PVMS services may be configured to start manually or automatically on boot. PVMS Services may be managed via the Administration module of Perspective VMS. We recommend creating a Windows user 'pvms' to be used to run these PVMS and Windows IIS services. This user must be added to the Windows administrator group to have administrative privileges. We also recommend selecting 'Automatic (Delayed Start)' for the 'Startup Type'. Click 'Next >'.



9) Create shortcuts (optional). Click 'Next >'.



10) Install and Finish: No writing action will take place at this point in the wizard. By clicking install the application process will begin. Click 'Install'.



11) Click Finish to complete the PVMS installation.

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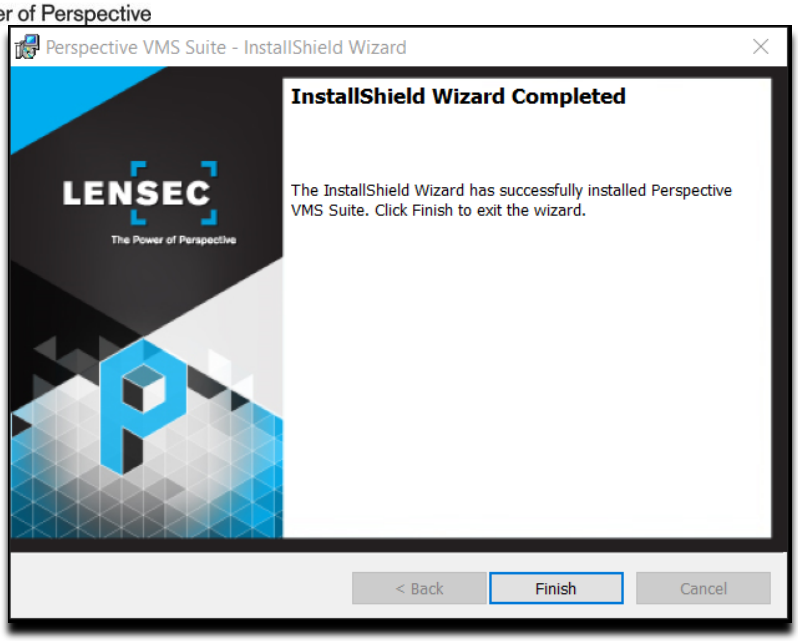


Launching Perspective VMS for the first time

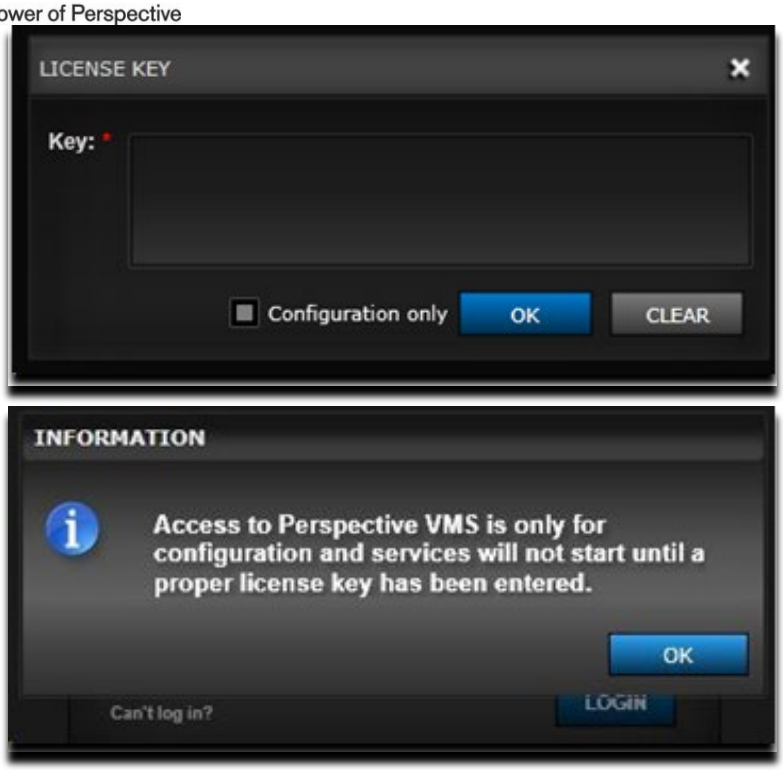
Perspective VMS is a web application and must be opened in a web browser. To open from a web browser, the URL would be: (http://<ServerName>/PerspectiveVMS), where the <**ServerName**> may be the "hostname / computer name" of the PC, the "IP address", or if on the local machine itself it could be "localhost" or the loopback IP address "**127.0.0.1**".

Application Shortcut browser variations (above)

Licensing and Authorization

Upon successful installation of Perspective VMS, you will be prompted to enter a license key that can be obtained by contacting technical support: licensing@lensec.com. Your purchase order for the Perspective VMS application will be verified and a license key will be issued via e-mail.

An alternative option is to select "Configuration only," which allows PVMS to be opened for administration design and system configuration but will not allow for the starting of streaming or archiving services until a full license is issued.



Note regarding Camera Licenses, Perspective VMS is generally sold by the number of cameras or devices associated to the overall solution. The License Key will represent the purchase order of these licenses. That said, if a camera is replaced or exchanged a new software license **DOES NOT** need to be purchased nor does the license key need to be changed.

Server Key Generator

To obtain a license, a specific Server Key must be generated and submitted to LENSEC. This can be emailed to licensing@lensec.com or submitted by web form at lensec.com/pvms-activation/. When PVMS is installed, an applet named "Server Key Generator" is also installed. Locate the Server Key Generator by clicking on the Windows Start menu or search for the Server Key Generator in the Windows search field. Opening this applet will produce the Server Key necessary to generate a license. Alternatively, the PC's MAC address may also be submitted for license key generation.

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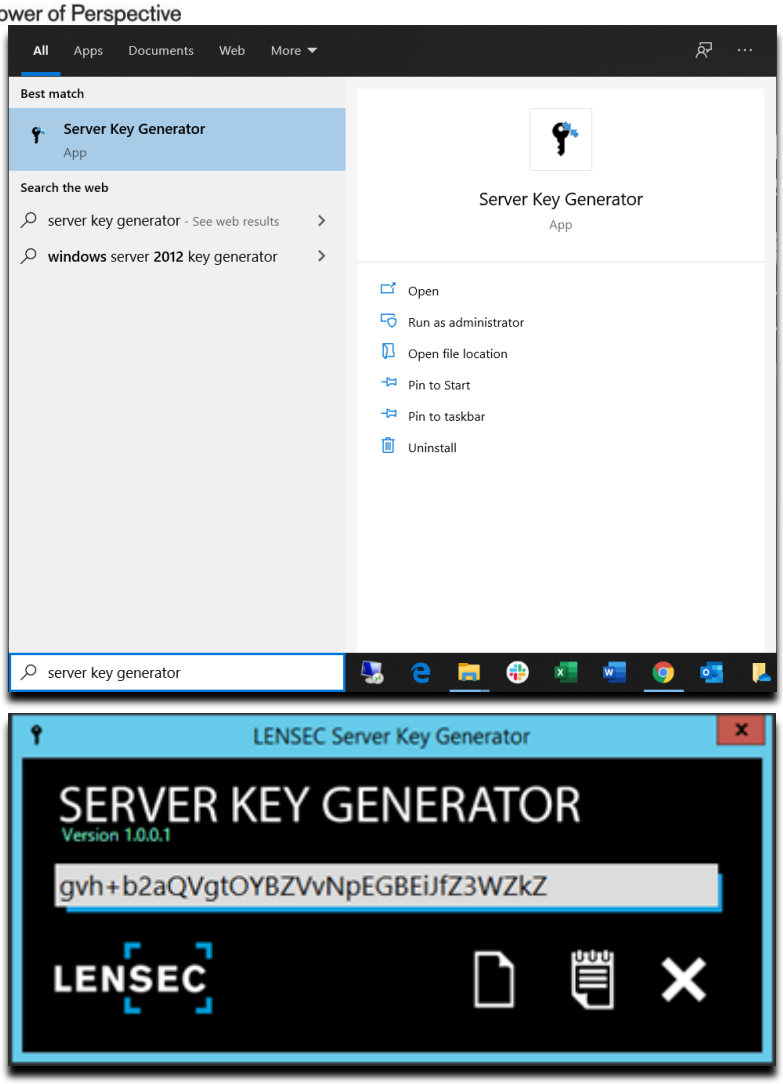

Upgrading Perspective VMS to a newer version

To upgrade to a newer version of Perspective VMS, you must first uninstall your current version of Perspective VMS. Before any action is taken, it is **highly recommended to back up your SQL database first!**

Back up the SQL database

1. The SQL database should be backed up every time a software upgrade in intended.
2. To back up the SQL database, go to the Administration module and locate the Backup Utility from the left sidebar: ADMINISTRATION>SETTINGS>Backup Utility

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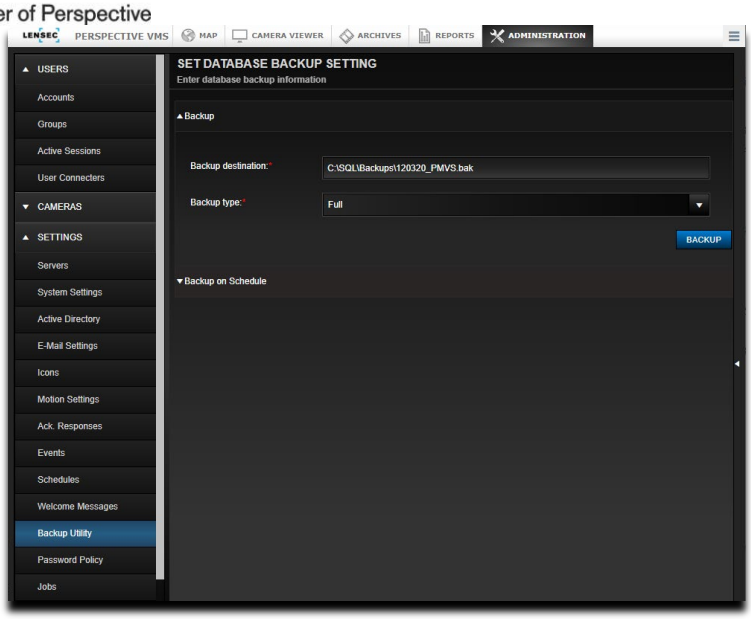
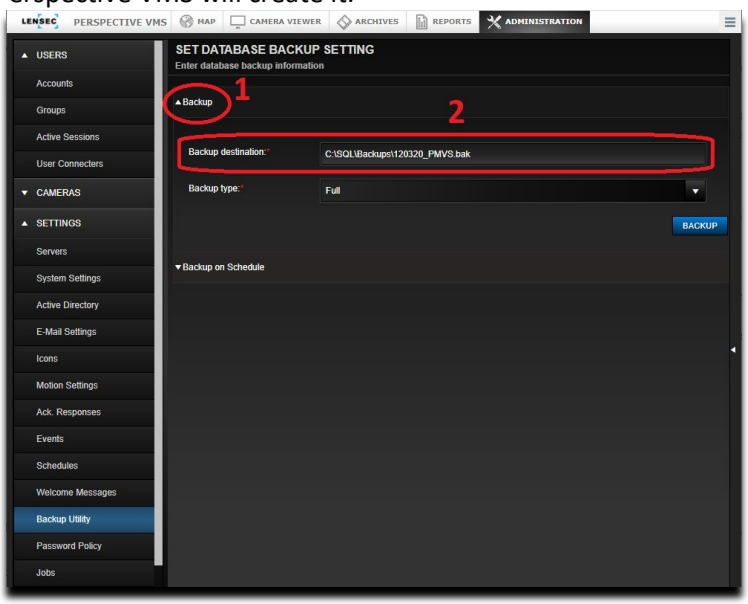
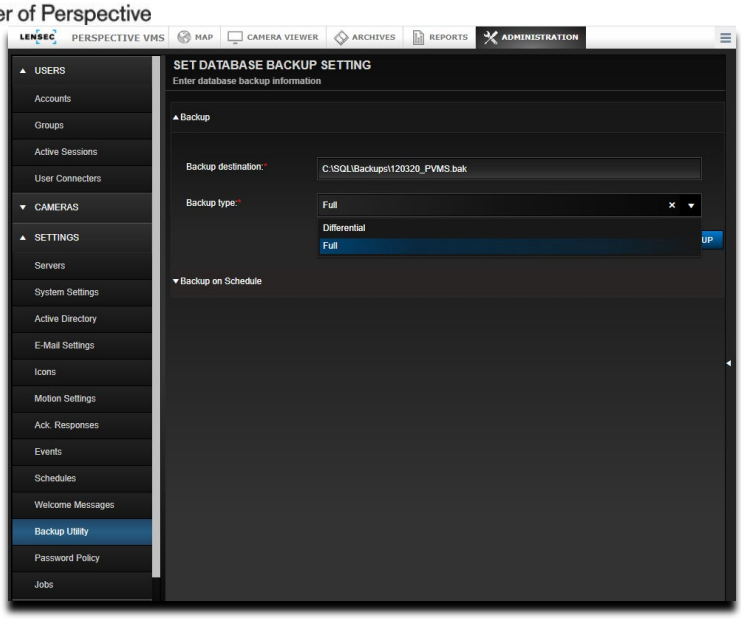


3. Expand 'Backup' (1) to reveal the backup destination field (2). You can list a folder in any location that is accessible from this server. You will name the backup destination file. If the folder has not been created yet, Perspective VMS will create it.



4. You can choose whether to have a Full backup or a Differential backup from the dropdown menu. A differential backup saves any changes made since the last full backup.



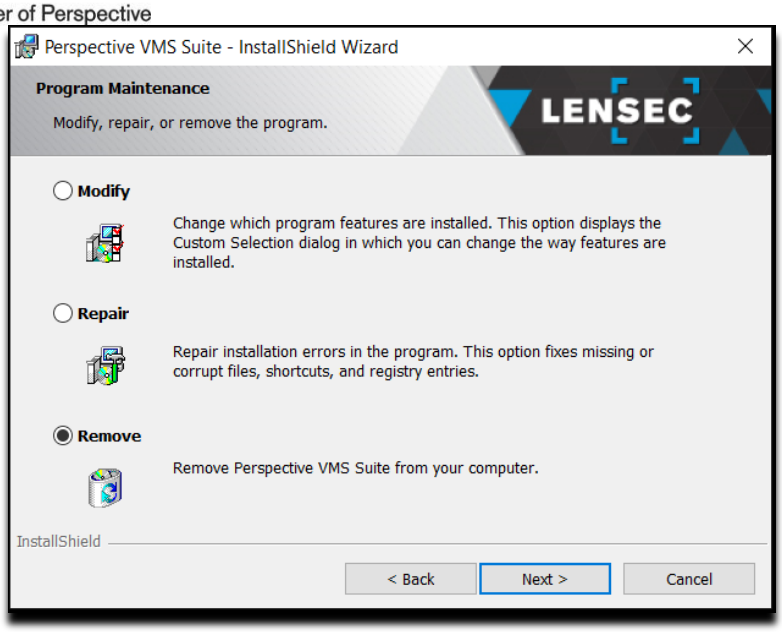
5. Once the backup is complete, you will receive a notification. Depending on the size of the database, the backup could complete in a few seconds or up to several minutes.

6. Now that the database is backed up, you can continue installing a newer version of Perspective VMS.

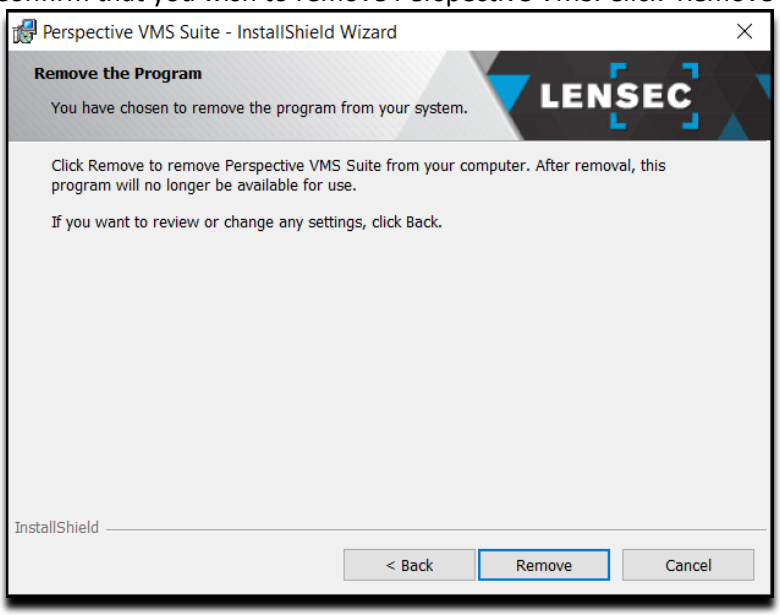
Remove Perspective VMS

1. Run the Perspective VMS installer file that you downloaded from lensec.com/download/.
2. When the InstallShield Wizard launches, click 'Next >'.
    - Note: Another option to remove Perspective VMS, is to go to Windows Add or Remove Programs in the System settings. Select Perspective VMS Suite and click 'Uninstall'. If you wish to uninstall Perspective VMS using this method, skip to step 7.

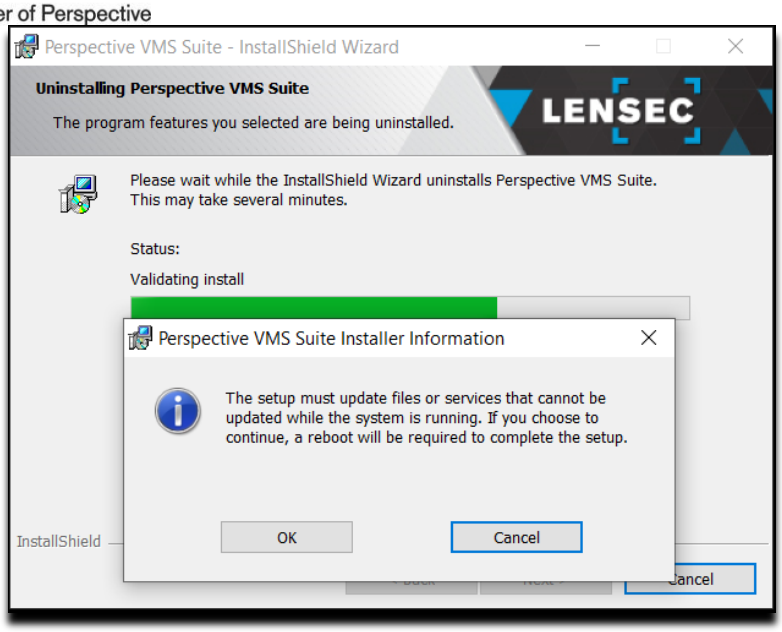
3. Select 'Remove' to remove Perspective VMS from your computer. Click 'Next >'.



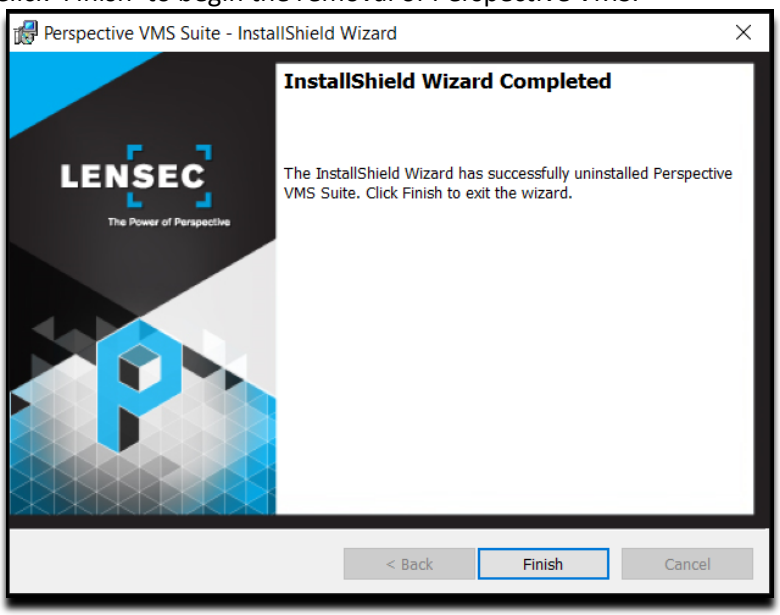
4. Confirm that you wish to remove Perspective VMS. Click 'Remove'.



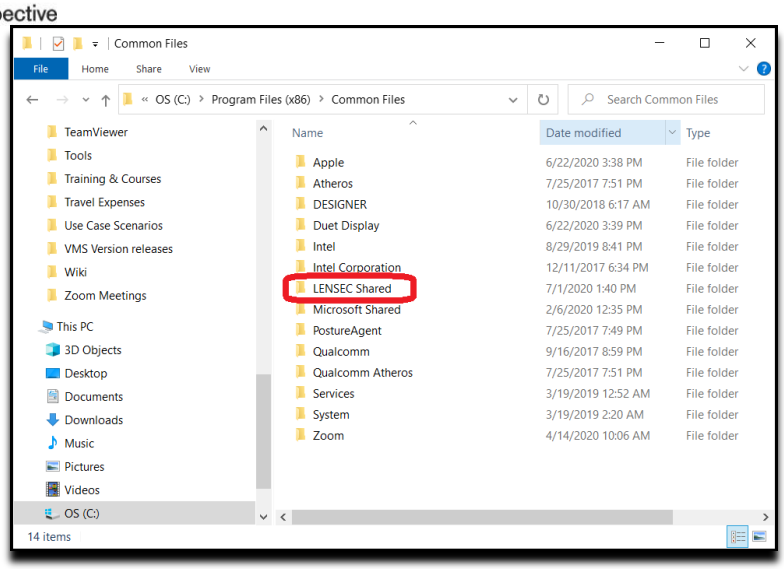
5. As a reminder, you will receive a pop-up notification to back up the database. Click 'OK' to continue, 'Cancel' to exit this InstallShield. If you need to back up the database, refer to Back up the SQL database above.

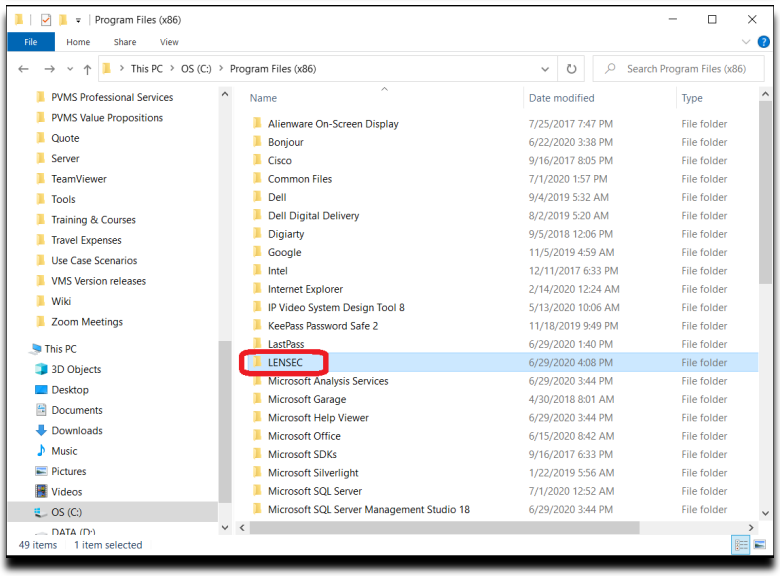


6. Click 'Finish' to begin the removal of Perspective VMS.



7. To provide a clean installation for the new version of Perspective VMS, there are two folders that should be deleted. Navigate to these two locations and with Administrator rights, delete these two folders:
   - C:/Program Files (x86)/Common Files/**Lensec Shared**
   - C:/Program Files (x86)/**Lensec**

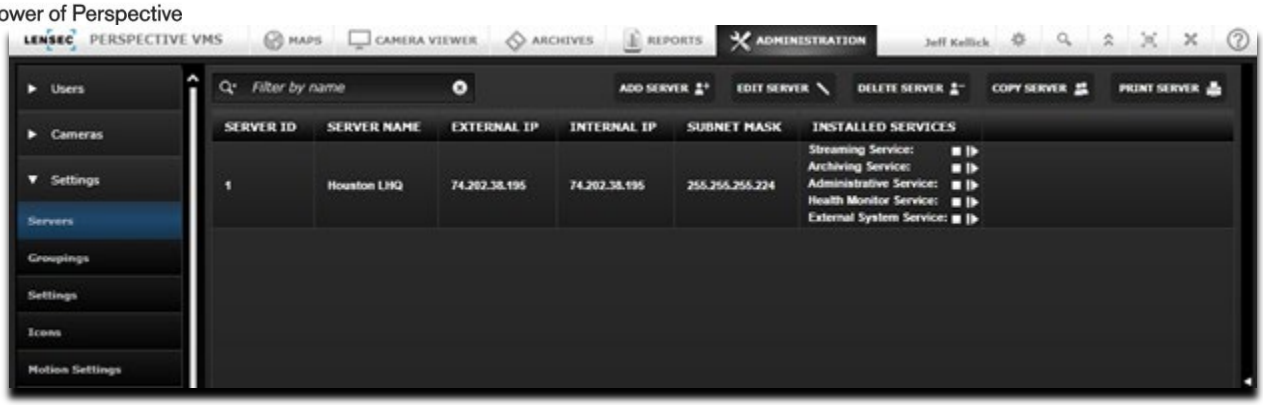




8. Perspective VMS is now successfully removed from your computer. Please reboot the computer before you begin to reinstall Perspective VMS.
9. Once the computer has restarted, you can now launch the InstallShield Wizard. See section Perspective VMS Installation Wizard to begin the installation. Note: All of your configurations will remain intact. You will not need to retrieve a new license key. The license key is tied to the MAC address of this computer.

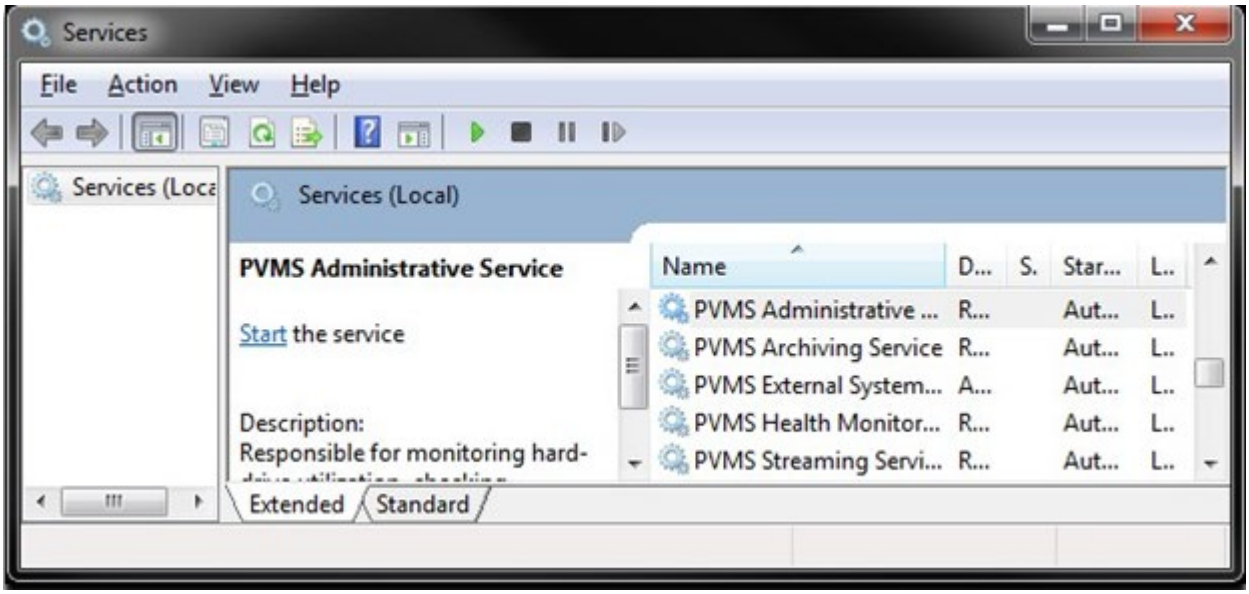
Managing Services within Perspective VMS

Services may be managed from within the Perspective VMS Administration Module. To accomplish this feature, the installer must associate the IIS management authority with the user account managing the Windows-based services. During the installation, the installer was asked to provide a Windows user account or to select “Local System” for both the services administration and app pool configuration. If the user selected has permissions from Windows to administer both than services may be administered from the web-based application:



Managing Services using Windows

To manage your installed services outside of Perspective VMS, use the Windows Management Console (Services) found in Administrative Tools of the Windows Control Panel.

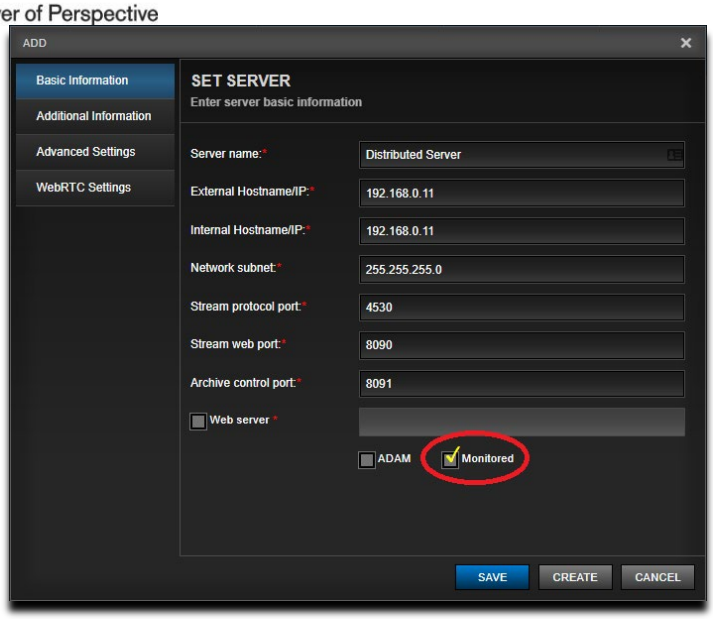


Distributed Architecture

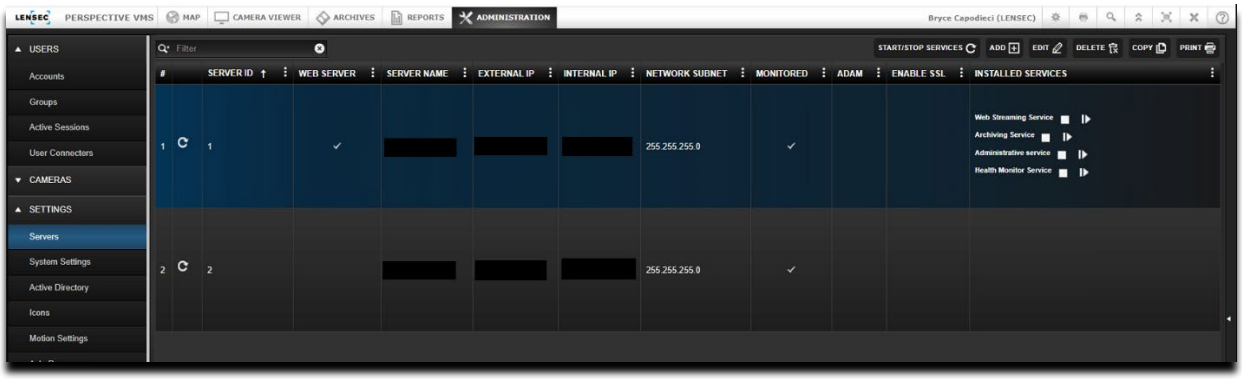
Before you begin installing PVMS on distributed servers, it is important to set up the servers in PVMS, on the primary web server first. The services will appear on the web server interface after PVMS is installed on the distributed server and those services are manually started. You may have to click the refresh icon on the webserver for those services to appear.

Primary/Web Server

1) Navigate to ADMINISTRATION>SETTINGS>Servers. Click 'ADD' to create a new server. Complete the required information for your Distributed Server. Make sure to click 'Monitored'. This will allow the Health Monitor Service to monitor this server and alert you in the event of any issues. Click 'SAVE' to continue.



2) Now that you have the distributed server set up in PVMS on the primary server, you can now begin the installation of PVMS on the distributed server. **NOTE: if you are adding a distributed server to an already existing network, it is very important that you back up the SQL database on the primary server BEFORE starting the distributed server PVMS installation.**



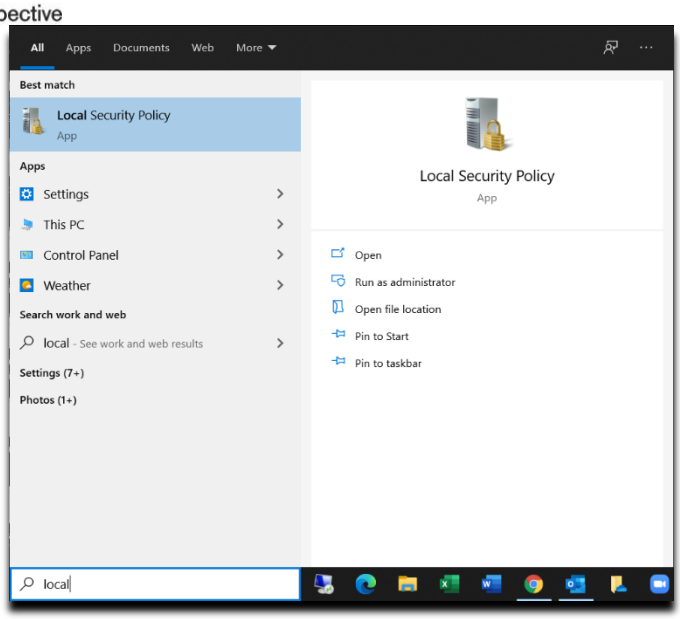
Distributed Server

When installing Perspective VMS across multiple servers, it will be necessary to complete a couple of steps prior to the PVMS installation on those distributed servers.

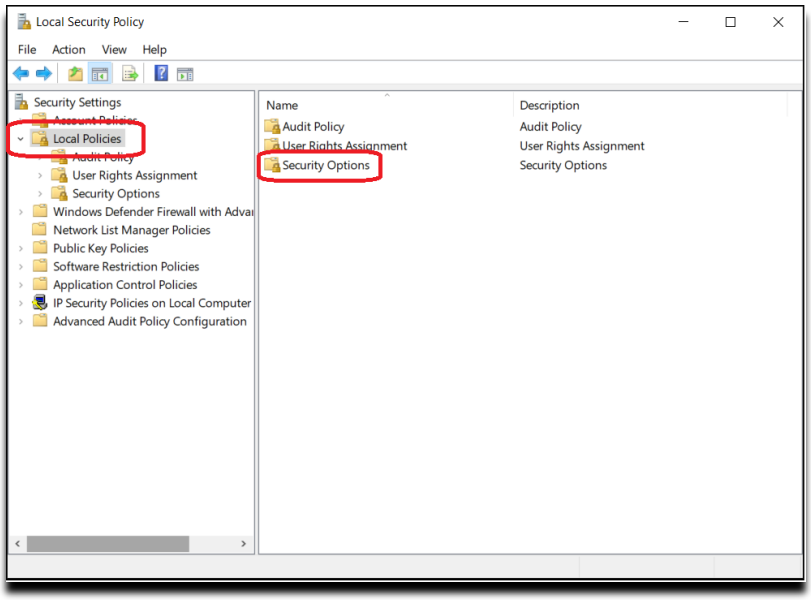
1) A domain account or matching local account name/password (for workgroup connected computers) is necessary to use when setting up the distributed servers. Servers purchased through LENSEC will have the local user ‘pvms’ pre-configured with Administrator rights.

2) On the distributed servers, you will need to update the Local Security Policy

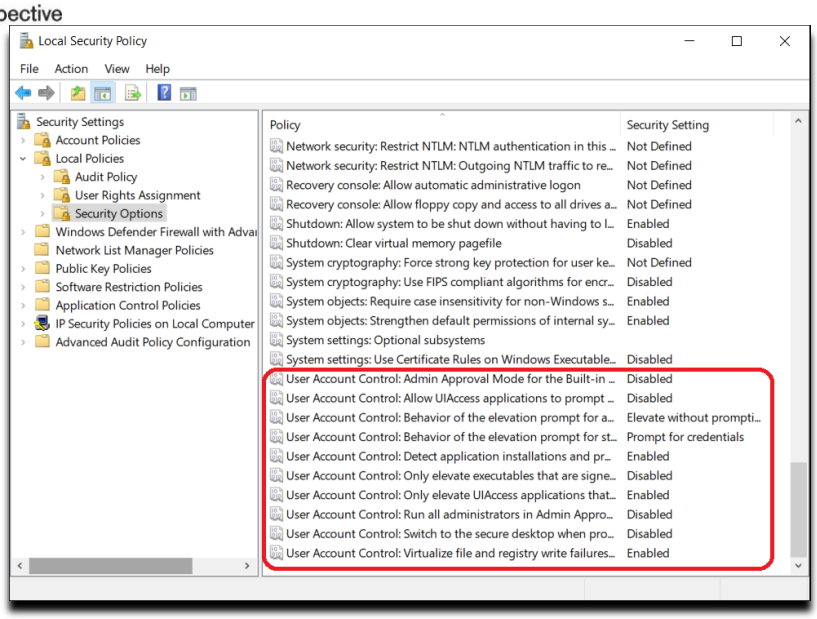
    a. Search for Windows Local Security Policy and run as administrator.



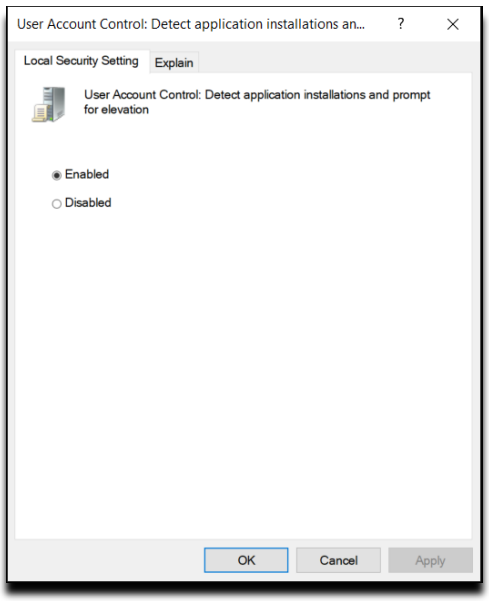
b. Expand the 'Local Policies' folder to view 'Security Option.



c. Double click 'Security Options' and scroll to the bottom of the list to view the 'User Account Controls'. Make sure the Security Settings match what is displayed in the picture below.

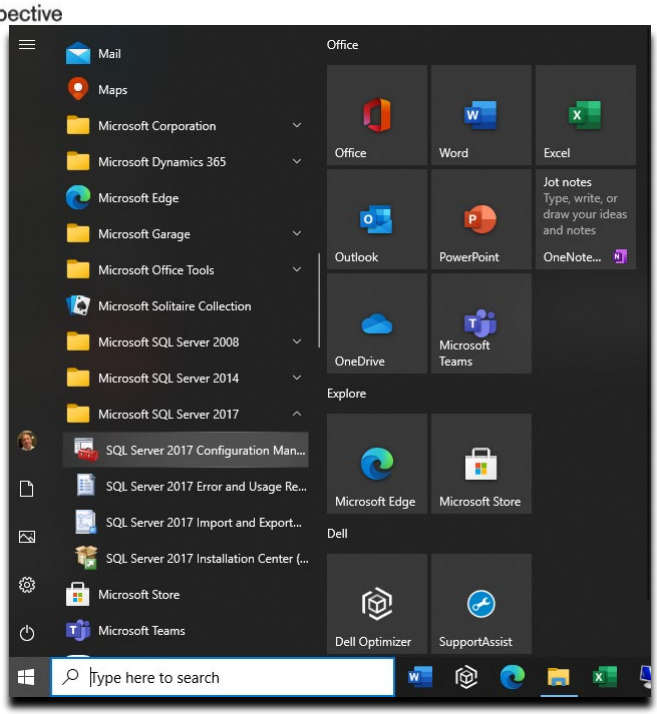


d. If a Security Setting needs to be changed, simply double click the line item to view a configuration popup window. Select the appropriate setting and click 'OK'.

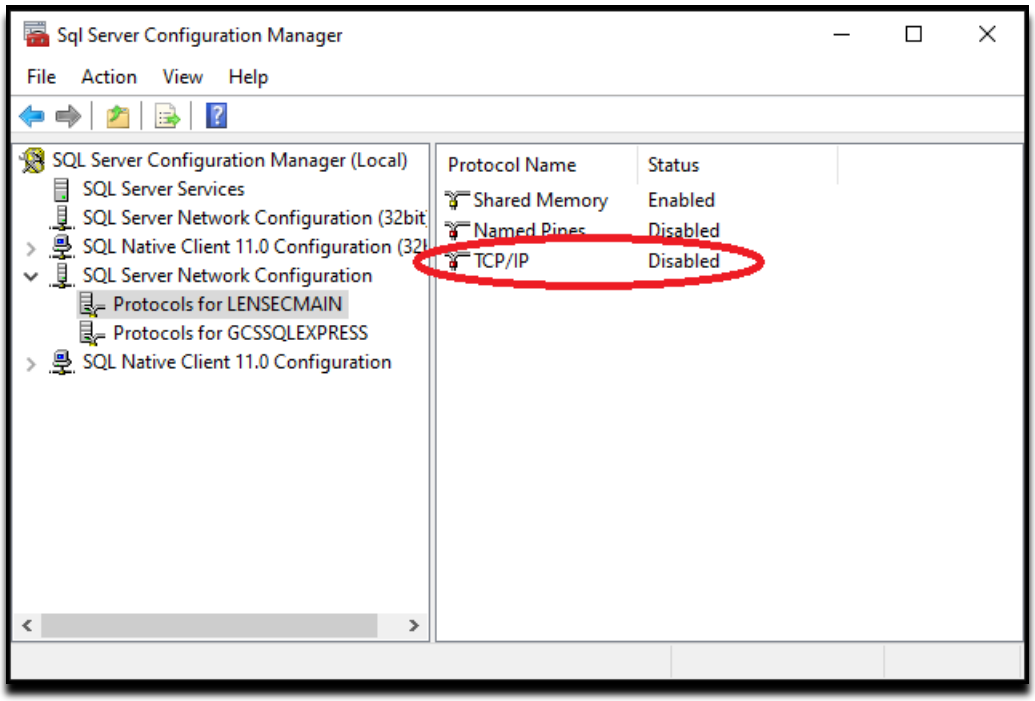


3) TCP/IP must be enabled for the SQL Server Network Configuration protocols for the LENSECMAIN database instance. This will be enabled on the database server

a. Open SQL Server Configuration Manager

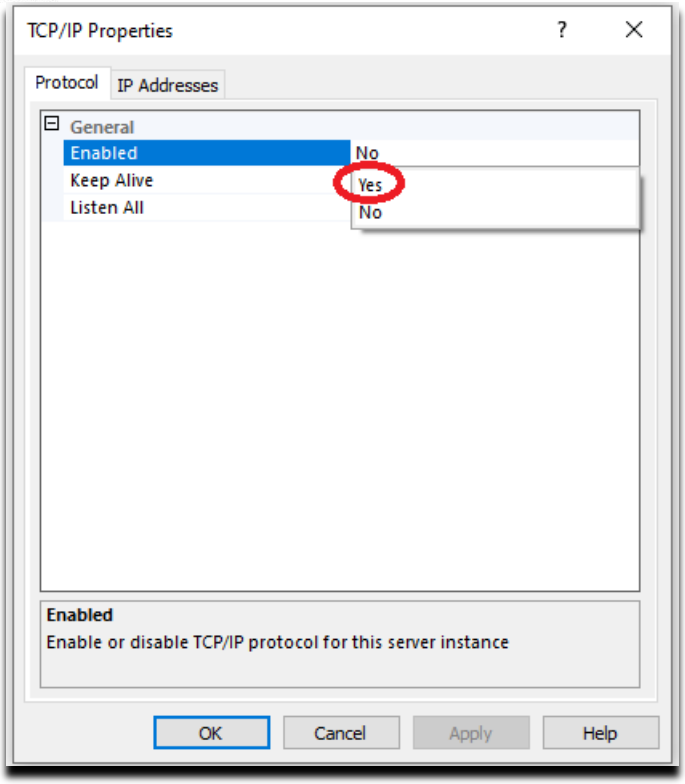


b. Expand ‘SQL Server Network Configuration’. Then click ‘Protocols for LENSECMAIN’ to view the protocols in the right panel.



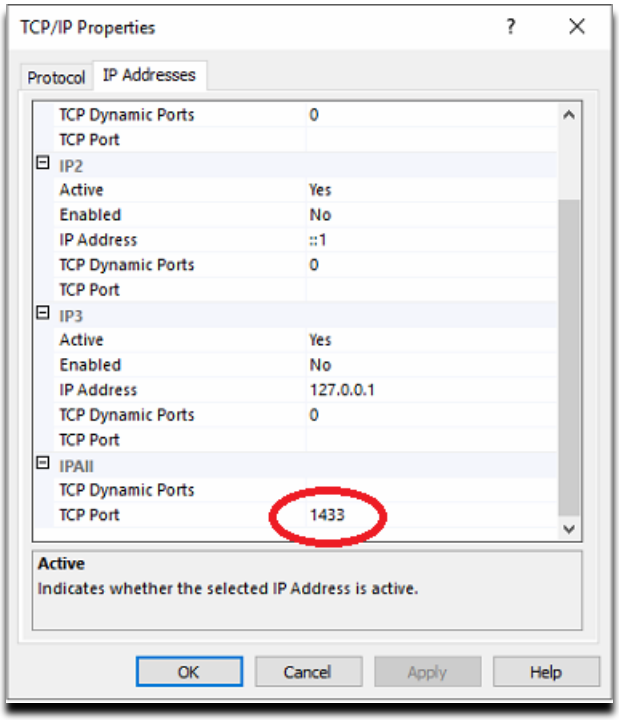
c. While the TCP/IP protocol is highlighted, right click and select “Properties”

d. Select ‘Enabled’. By default the value is set to ‘No’, from the dropdown menu, select ‘Yes’ to enable TCP/IP.



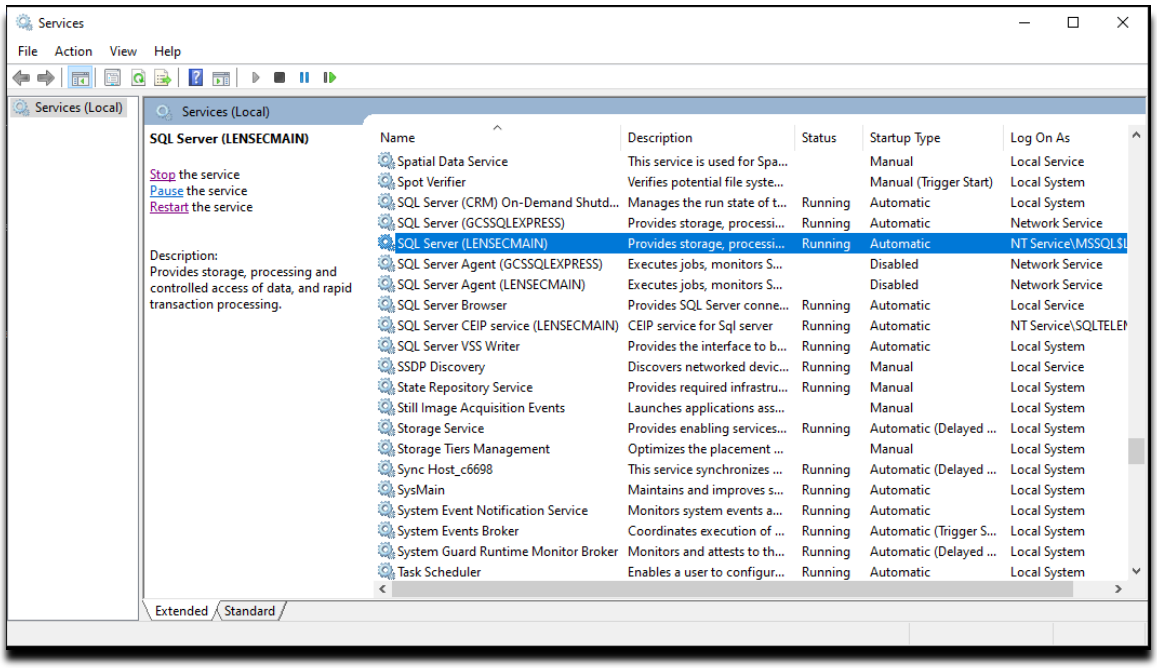
e. Next, select the 'IP Addresses' tab.

f. Scroll to the bottom to locate the section titled 'IPALL'. Configure static port 1433.



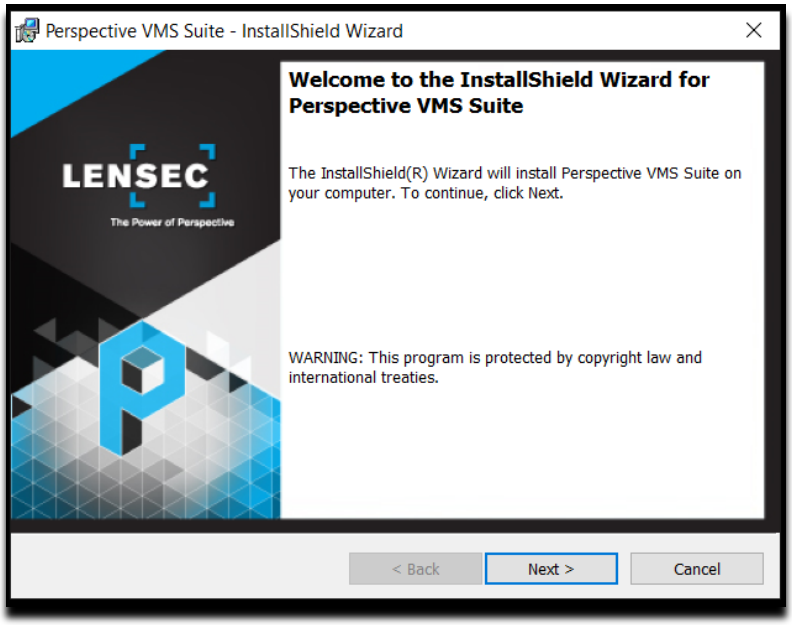
g. Click 'OK' when done.

h. This parameter will not take effect until the SQL Service is stopped and restarted. Look for the SQL Server service running the SQL database instance. In this case, and in most cases, it is LENSECMAIN

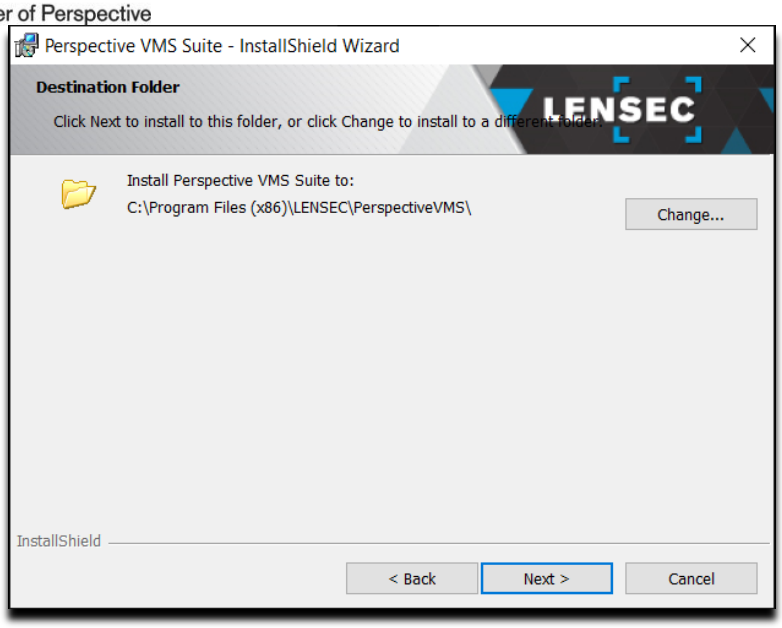


4) Now the distributed server is ready for the PVMS installation.

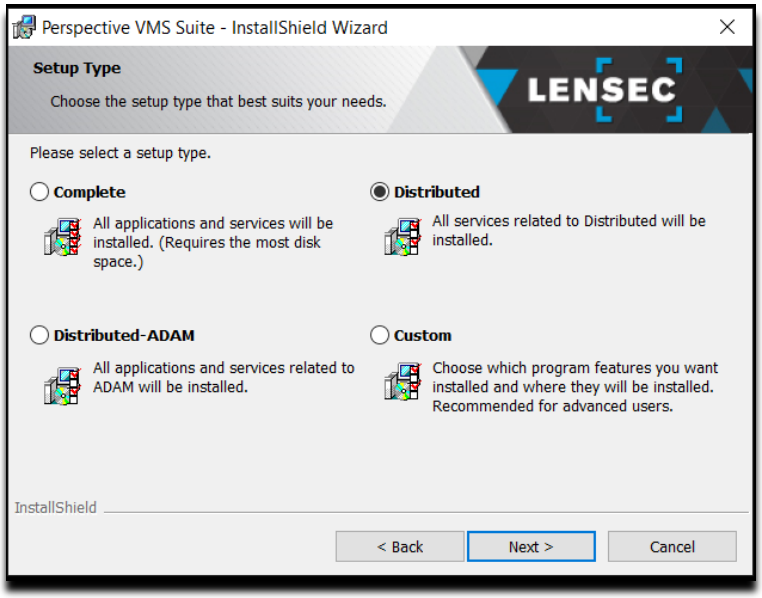
5) Begin PVMS Install Wizard. Click ‘Next >’.



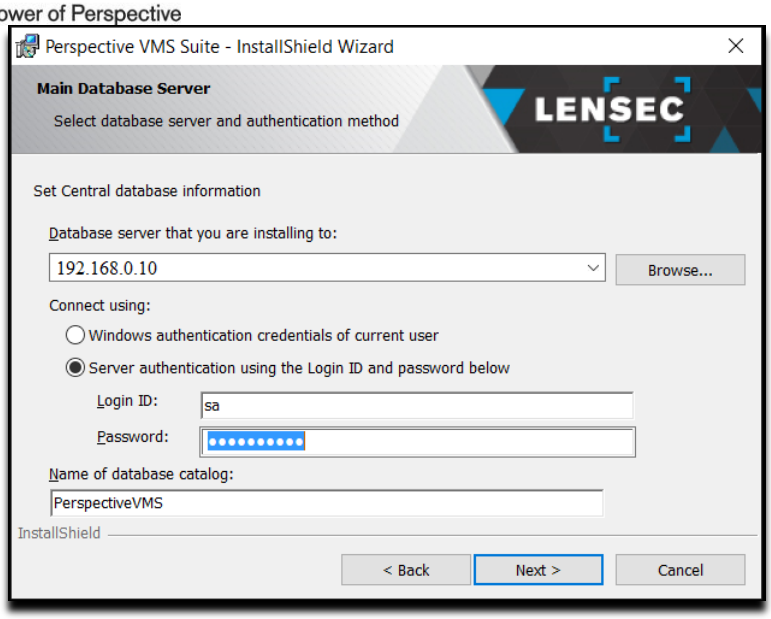
6) Accept (or modify) default path location. Click ‘Next >’.



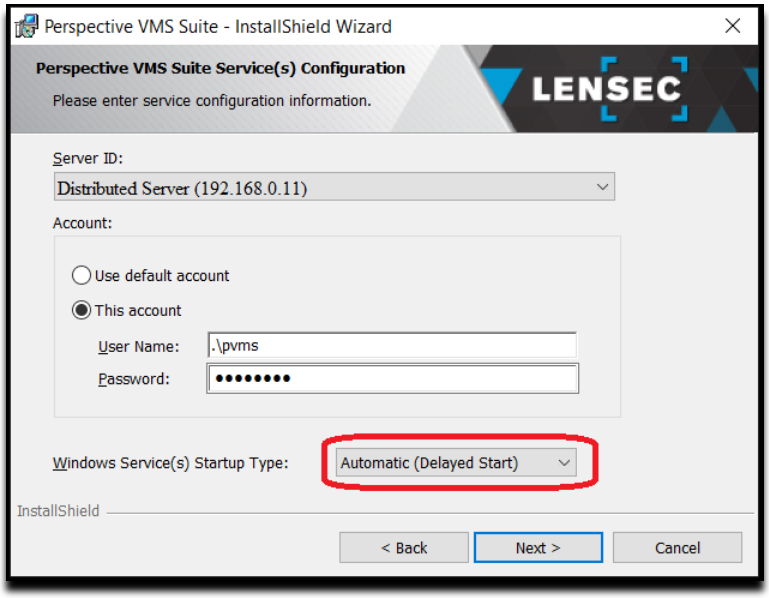
7) Select 'Distributed', click 'Next >'



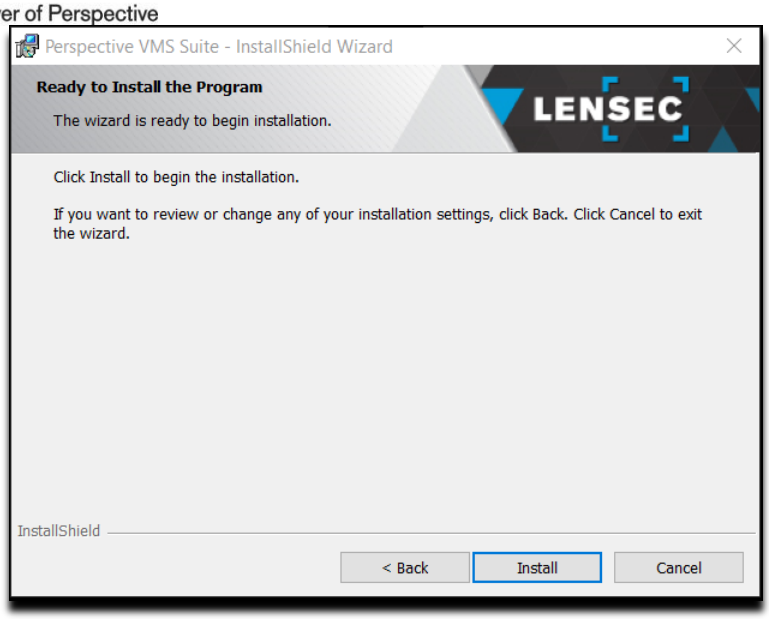
8) Select the SQL Database instance. From the 'Database server that you are installing to:', select the SQL database of the Primary webserver where the SQL database resides. This could be a domain name or in most cases the IP address of the Primary webserver. In this case, the Primary server IP address is 192.168.0.10. As with a stand-alone installation, it's best to choose server authentication using the 'sa' credentials.



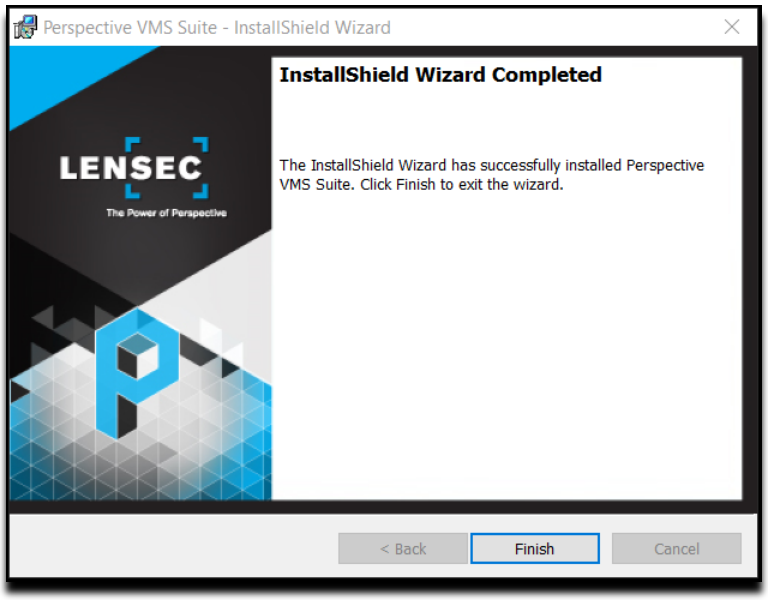
9) From the 'Server ID' dropdown menu, make sure the distributed server you are configuring appears in this list. If you did not set this up on the primary server first, you will not see the distributed server listed here. LENSEC recommends using the pvms user to run the PVMS servers. Any server purchased through LENSEC will have this user pre-configured with Administrator rights. It is important to use the same user on the primary server and all distributed servers. The user selected here will be the same user selected to run the Microsoft IIS service required in PVMS. In the example below, we are using the local user 'pvms'. The local computer is denoted by '.\' for the machine name prefix to the username. It is a good practice to use this method of denoting your local machine name, in case the machine name ever changes. Finally, make sure to select 'Automatic (Delayed Start)' from the 'Windows Service(s) Startup Type:' drop down menu. Click 'Next >' to continue.



10) At this point in the PVMS installation, nothing has actually been installed on the server. Click 'Install' to finalize the PVMS installation configurations.



11) It will take a few minutes for the installation to complete. Once it completes, click 'Finish'.



12) Return to PVMS on the primary server and start the PVMS services for the distributed server. You may need to refresh the server to see the PVMS Web Streaming Service and PVMS Archiving Service.

13) If the Distributed services appear, you have successfully added the distributed server. Repeat this process for any additional distributed servers.

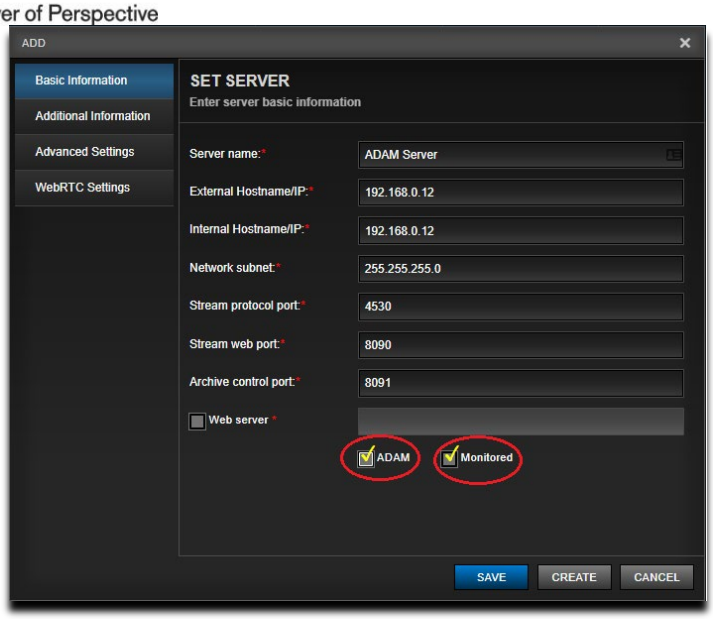
Autonomous Distributed Archive Management (Configuration)

Autonomous Distributed Archive Management (ADAM) is a feature for Enterprise edition customers who wish to ensure continuous uptime of distributed archive servers even when the primary database/administration server is inaccessible via the network. ADAM works by ensuring data transactions in relation to archive management are stored locally when connectivity to the primary database is interrupted.

Before you begin installing PVMS on distributed servers, it is important to set up the servers in PVMS, on the primary web server first. The services will appear on the web server interface after PVMS is installed on the distributed server and those services are manually started. You may have to click the refresh icon on the web server for those services to appear.

Primary/Web Server

1) Navigate to ADMINISTRATION>SETTINGS>Servers. Click ‘ADD’ to create a new server. Complete the required information for your Distributed-ADAM Server. Make sure to click the box for ‘ADAM’ and ‘Monitored’. ‘Monitored’ will allow the Health Monitor Service to monitor this server and alert you in the event of any issues. Click ‘SAVE’ to continue.



2) Now that you have the Distributed-ADAM Server set up in PVMS on the primary server, you can now begin the installation of PVMS on the distributed server. **NOTE: if you are adding a distributed server to an already existing network, it is very important that you back up the SQL database on the primary server BEFORE starting the distributed server PVMS installation.**

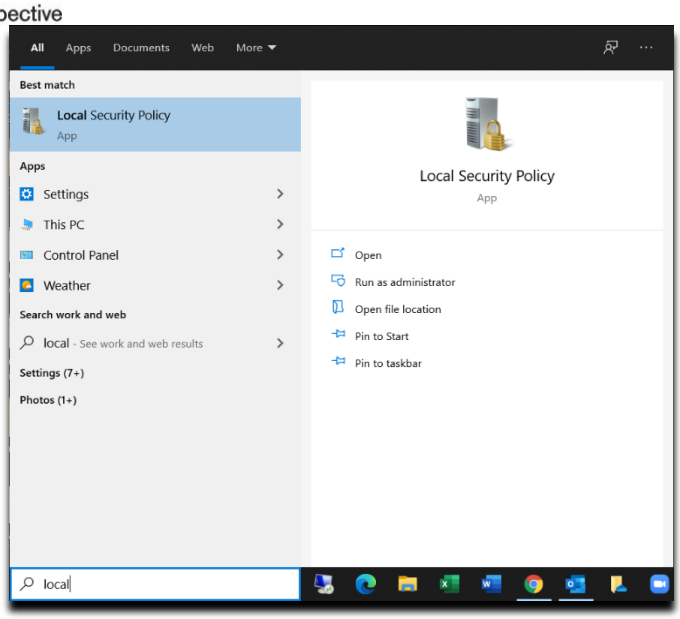
Distributed Servers

When installing Perspective VMS across multiple servers, it will be necessary to complete a couple of steps prior to the PVMS installation on those distributed servers.

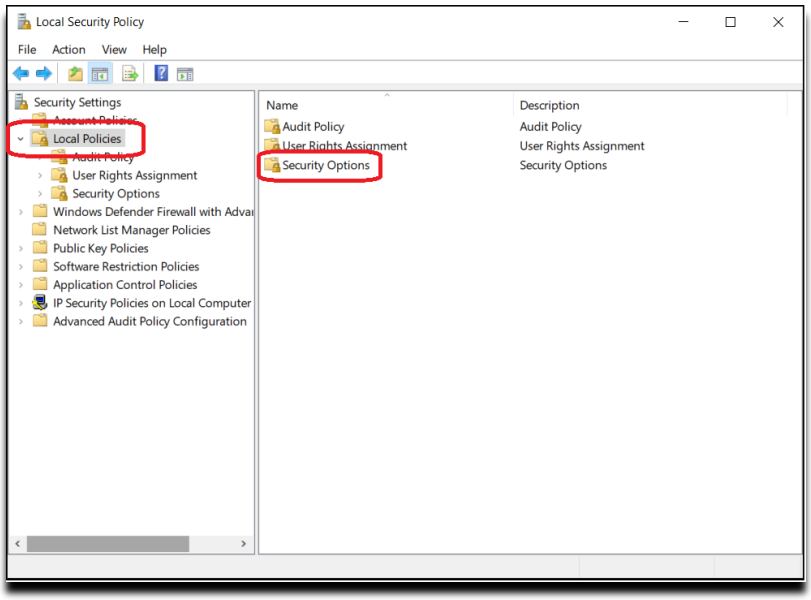
1) A domain account or matching local account name/password for workgroup connected computers is necessary to use when setting up the distributed servers. Servers purchased through LENSEC will have the local user 'pvms' pre-configured with Administrator rights.

2) On the distributed servers, you will need to update the Local Security Policy

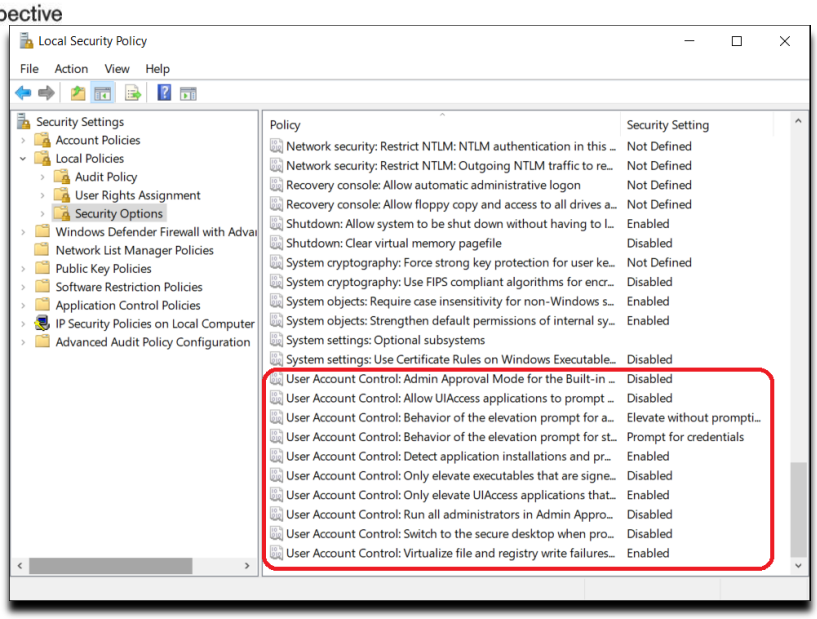
    a. Search for Windows Local Security Policy and run as an Administrator.



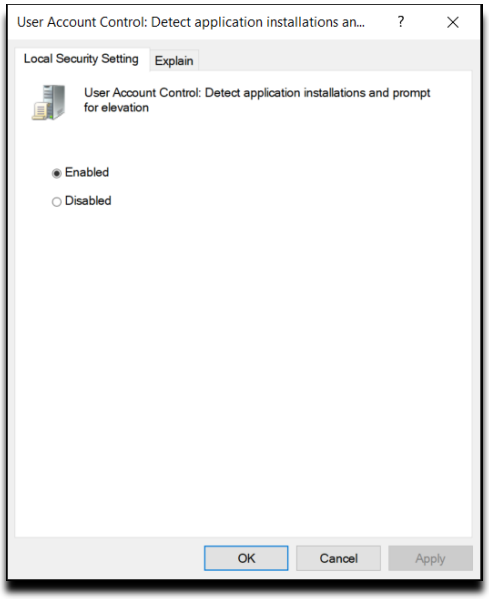
b. Expand the 'Local Policies' folder to view 'Security Option.'



c. Double click 'Security Options' and scroll to the bottom of the list to view the 'User Account Controls'. Make sure the Security Settings match what is displayed in the picture below.

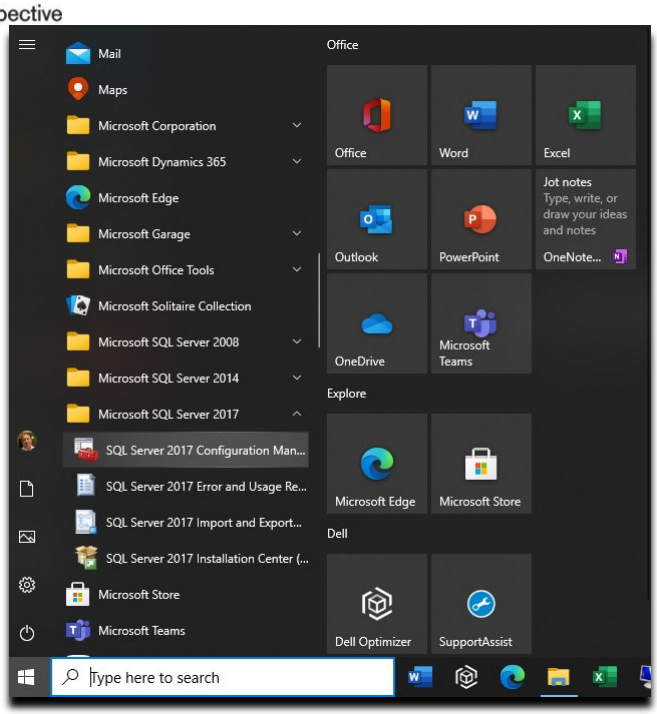


d. If a Security Setting needs to be changed, simply double-click the line item to view a configuration pop-up window. Select the appropriate setting and click 'OK'.

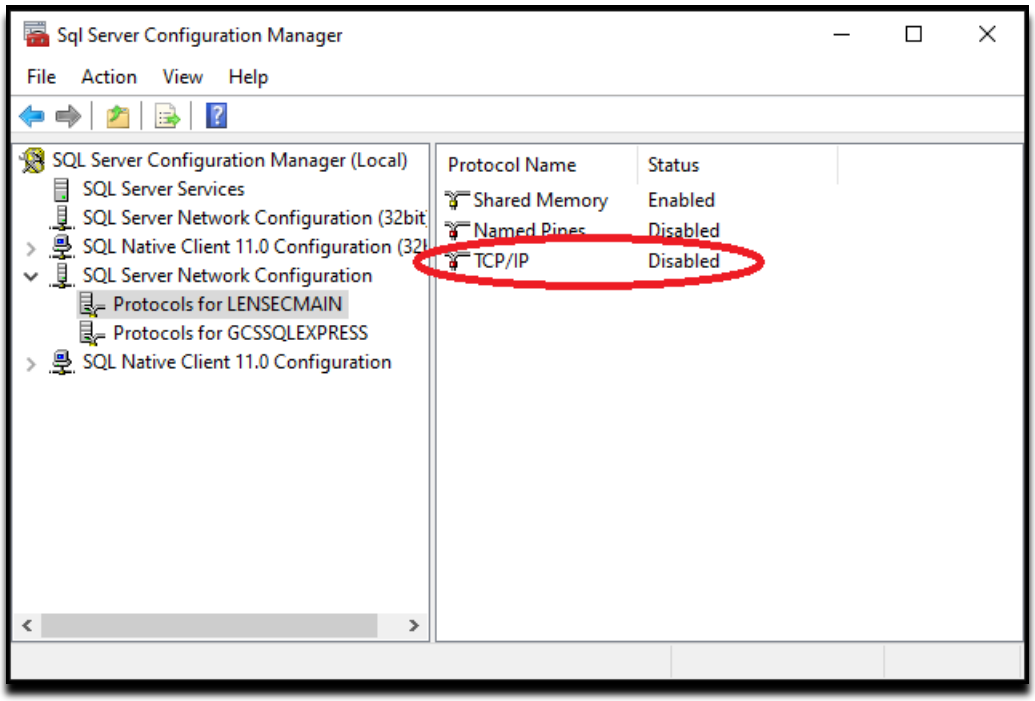


3) TCP/IP must be enabled for the SQL Server Network Configuration protocols for the LENSECMAIN database instance. This will be enabled on the database server

a. Open SQL Server Configuration Manager

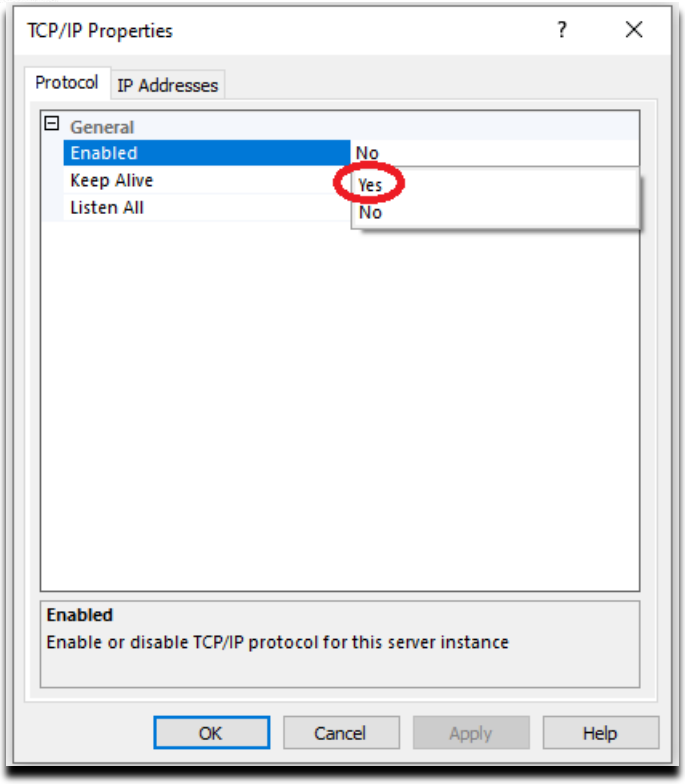


b. Expand ‘SQL Server Network Configuration’. Then click ‘Protocols for LENSECMAIN’ to view the protocols in the right panel.



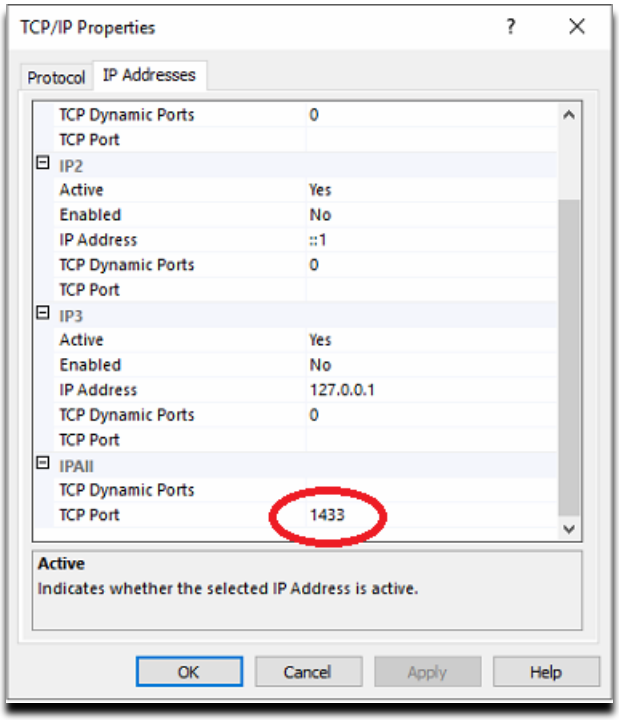
c. While the TCP/IP protocol is highlighted, right click and select “Properties”

d. Select ‘Enabled’. By default the value is set to ‘No’, from the dropdown menu, select ‘Yes’ to enable TCP/IP.



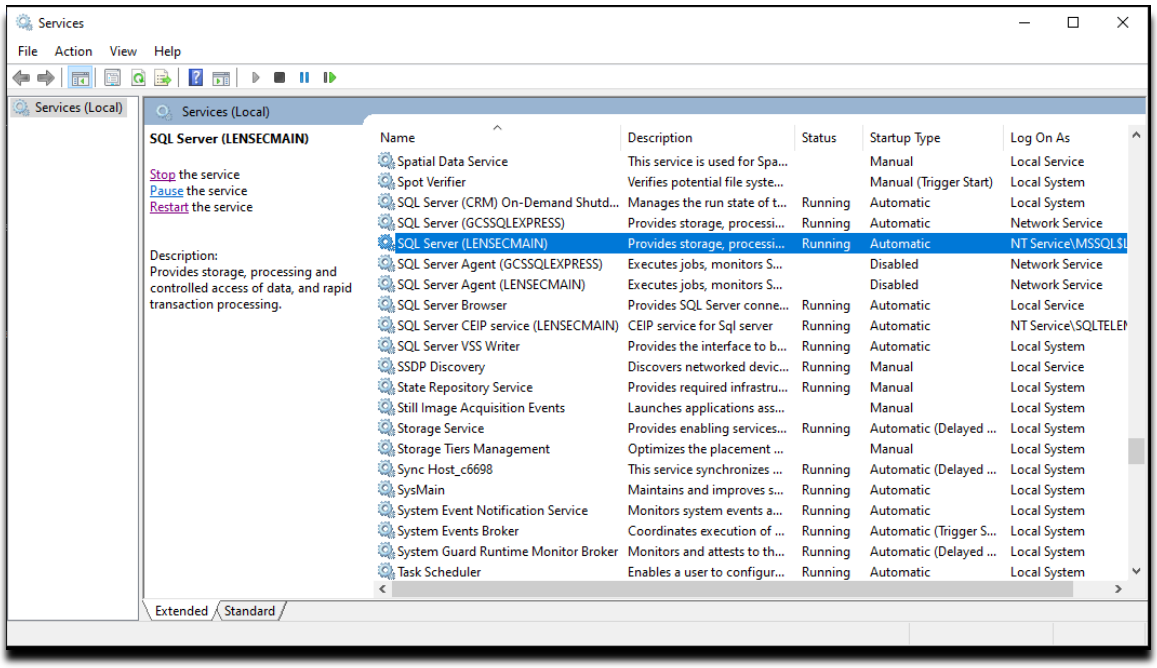
e. Next, select the 'IP Addresses' tab.

f. Scroll to the bottom to locate the section titled 'IPALL'. Configure static port 1433.



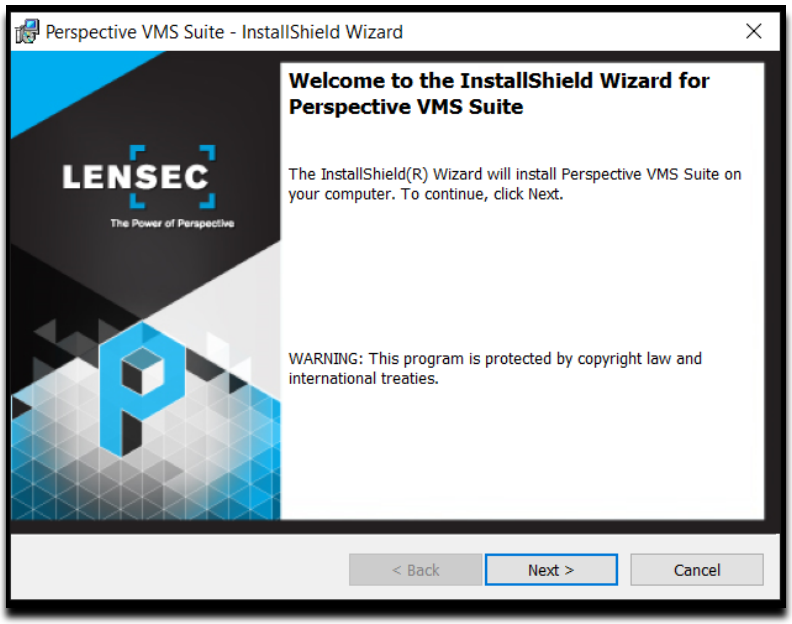
g. Click 'OK' when done.

h. This parameter will not take effect until the SQL Service is stopped and restarted. Look for the SQL Server service running the SQL database instance. In this case, and in most cases, it is LENSECMAIN

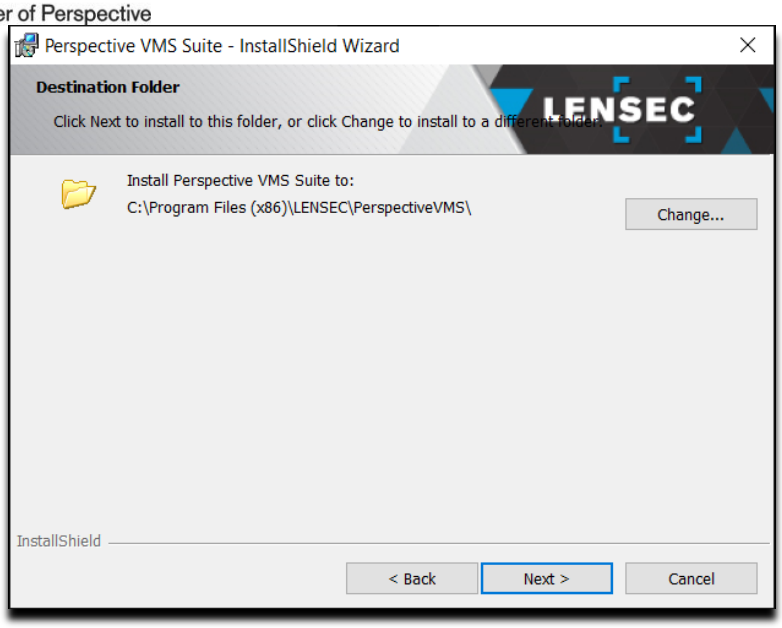


3) Now the distributed server is ready for the PVMS installation.

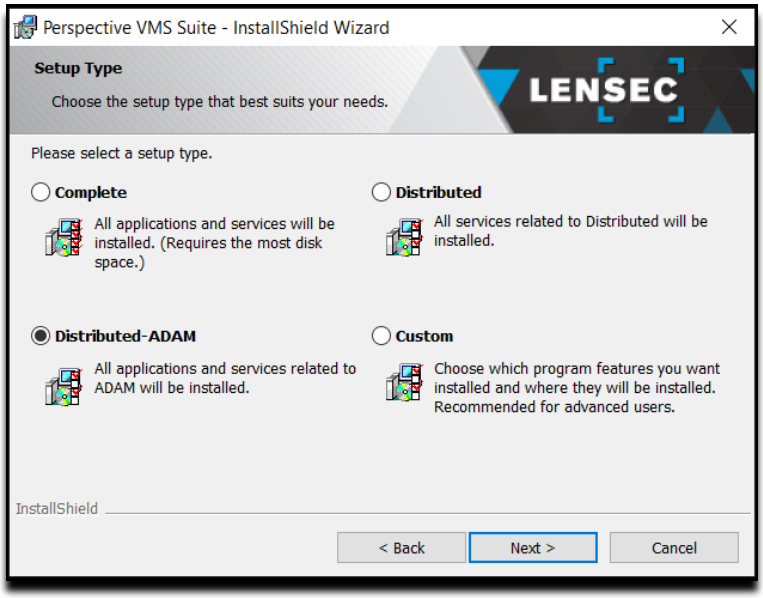
4) Begin PVMS Install Wizard. Click ‘Next >’.



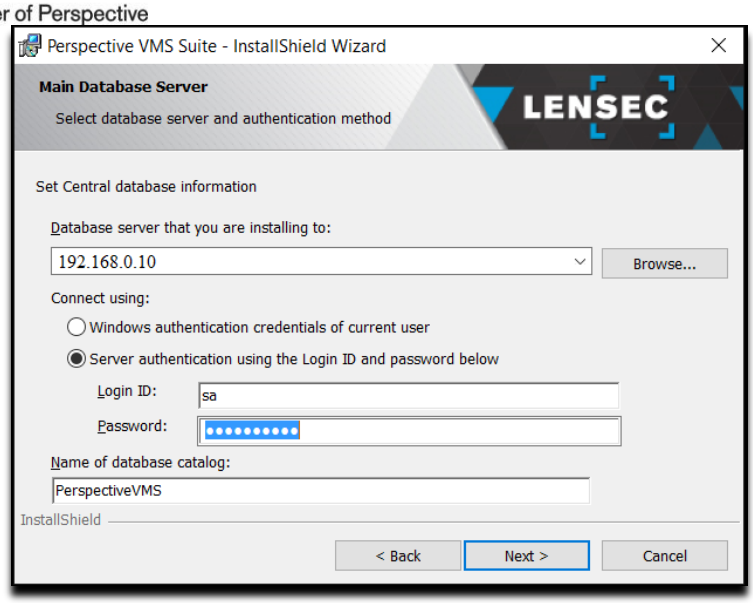
5) Accept (or modify) default path location. Click ‘Next >’.



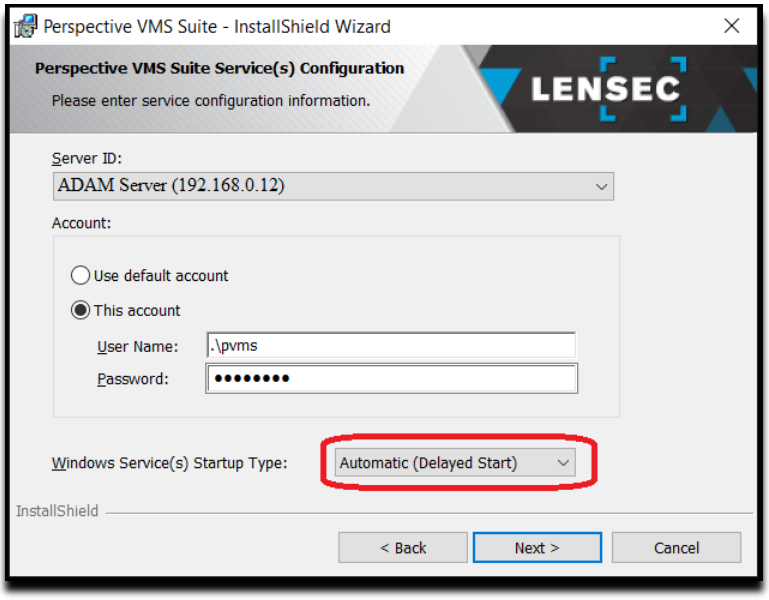
6) Select 'Distributed-ADAM', click 'Next >'



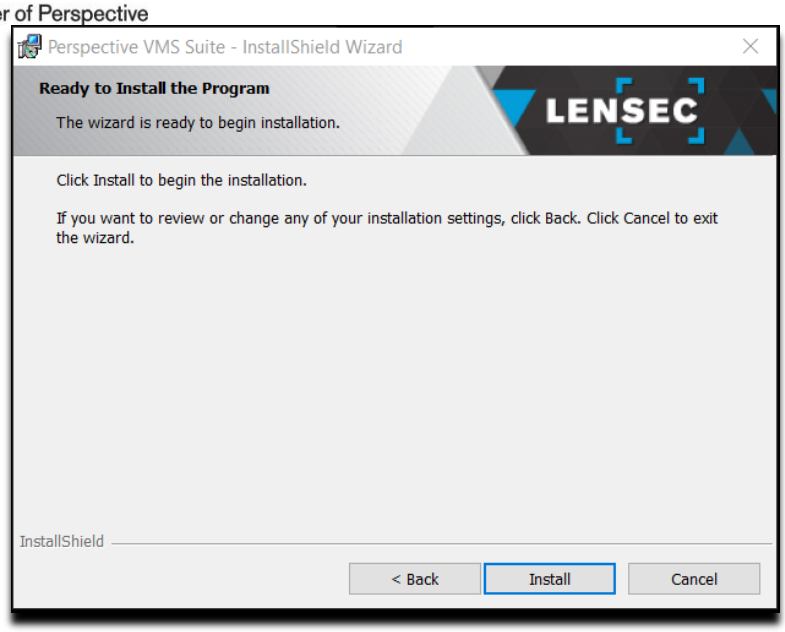
7) Select the SQL Database instance. From the 'Database server that you are installing to', select the SQL database of the primary web server where the SQL database resides. This could be a domain name or in most cases the IP address of the primary web server. In this case, the primary server IP address is 192.168.0.10. As with a stand-alone installation, it's best to choose server authentication using the 'sa' credentials.



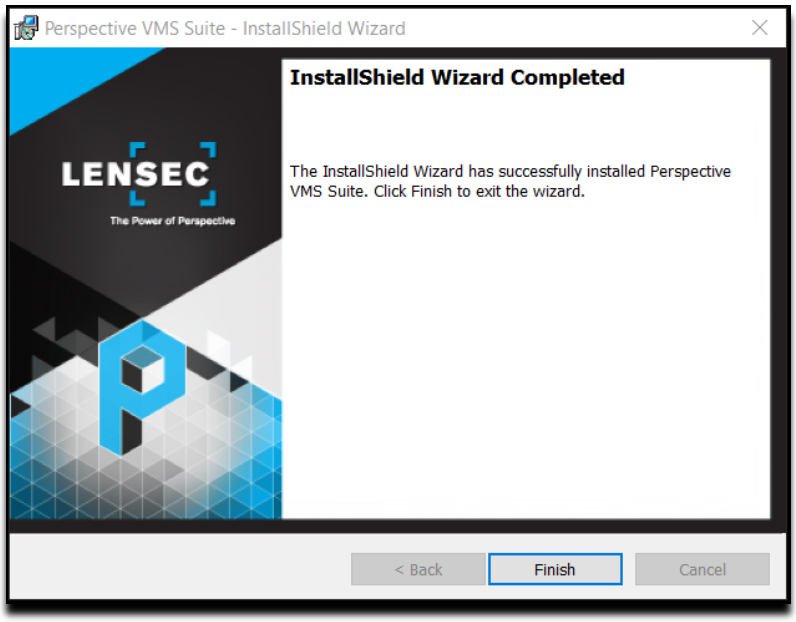
8) From the 'Server ID' dropdown menu, make sure the distributed server you are configuring appears in this list. If you did not set this up on the primary server first, you will not see the distributed server listed here. LENSEC recommends using the 'pvms' user to run the PVMS servers. Any server purchased through LENSEC will have this user pre-configured with administrator rights. It is important to use the same user on the primary server and all distributed servers. The user selected here will be the same user selected to run the Microsoft IIS service required in PVMS. In the example below, we are using the local user 'pvms'. The local computer should be denoted by '.\' for the machine name prefix to the username. It is a good practice to use this method of denoting your local machine name, in case the machine name ever changes. Finally, make sure to select 'Automatic (Delayed Start)' from the 'Windows Service(s) Startup Type:' drop down menu. Click 'Next >' to continue.



9) At this point in the PVMS installation, nothing has actually been installed on the server. Click 'Install' to finalize the PVMS installation configurations.



10) It will take a few minutes for the installation to complete. You will see that the SQL database is installed first. This is the local SQL database. The default SQL instance name is 'LENSECLOCAL'. The 'sa' password for this instance is L3nSec!@
11) Once the installation completes, click 'Finish'.



12) Return to PVMS on the primary server and start the PVMS services for the Distributed-ADAM server. You may need to refresh the server to see the PVMS Web Streaming Service, PVMS Administrative Service and PVMS Archiving Service.

The Power of Perspective

13) If the Distributed-ADAM services appear, you have successfully added the Distributed-ADAM server. Repeat this process for any additional distributed servers.