

Installation Guide: vSolution Link Pro on IIS

Version 1.9.3



Windows Server

Internet Information Services

Welcome

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vSolution Link Pro Installation Guide on IIS

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1. About this Guide

This document explains the setup of vSolution Link Pro application by WolfVision on a Windows IIS server.

2. Copyright

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2024-11-27

3. System Requirements

Windows Web Services (IIS Internet Information Server)

As vSolution Link Pro is a web server application, it can be accessed by any modern fully HTML5 compatible browser of a third-party device in the local network.

To use all features the application provides, it has to be installed as IIS (Internet Information Server). Email credentials, SSL certificate, Internet access and 24/7 server availability are also required.

The software (64bit application) can be installed on following operating systems. The following shows the minimum system requirements, more recommended:

- Windows Server 2019 or newer
(all requirements according to Microsoft must be fulfilled)
- CPU minimum 1 Core with 2.60GHz (2 cores, or more recommended)
- 4GB RAM (8GB, or more recommended)
- 100GB minimum free disk space for firmware files (250GB, or more recommended)
- Access to secure port (e.g. 443, https default)
- Server address (IP:port) has to be reachable via secure web socket (wss)
- .NET Core Hosting Bundle, tested with version 8.0.11

Please note

Latest updates recommended.

Earlier versions of operating systems are not tested and may not be supported.

Please note the required disk space for the local firmware repository, disk space of at least 20GB is recommended.

To access the devices, they have to be online **and** in the same network to be reachable! Pay attention of correct network settings, especially when running in special network environments.

Cynap systems will disable their LAN ports when powering down by default and can be powered up by using the Wake on LAN functionality. For network infrastructures with blocked Wake on LAN, use power down mode Power Save to keep the LAN port of your Cynap active. When using WolfVision Visualizer devices, use power down modes Normal or ECO to keep the LAN port active. Certain Visualizer models are supporting Wake on LAN (check power down mode of connected Visualizer).

An incorrect system time may cause network connection to fail, the use of a valid timeserver recommended.

3.1. Custom Email-Provider

Valid custom email-provider credentials are required when enabling:

- 2-factor authentication
- Management Hub
- Event log Email notification
- Box Replacement*
- Password reset*

* If no custom provider is set, the integrated Sendgrid account will be used for sending Emails.

3.2. SSL certificate – prerequisite for enabling Management Hub

A valid SSL certificate is required when restricting the access to https.

3.3. Firewall Rules

Ensure that all necessary ports, services and IP addresses are available and not blocked by your firewall (external and personal).

Acknowledgements ("ACKs") of TCP packets are not considered in the following table in order to be able to illustrate the direction of the data packets. Since acknowledgements are usually sent back via the same TCP port, the other direction shall not be blocked to ensure smooth functioning.

On certain systems, you have to set a rule to allow the application:

WolfVision.MgmtTool.Api.exe for full functionality.

Function / Application	Port	Type	Inbound / Outbound	Description
vSolution Link Pro				
Wake On LAN	7 / 9	UDP	Inbound / Outbound	Wake On LAN – Usually port 7 is used for sending the magic packet
DNS	53	TCP / UDP	Inbound / Outbound	DNS – This port will be used for Domain Name System. If this port is blocked, DNS service are not available
http, Cynap control	80	TCP	Inbound / Outbound	This is the default port to connect to the web interface (httpd) of vSolution Link Pro. Of this port is blocked, connection cannot be established
https, SSL, e.g. Cloud Service, Cynap control	443	TCP	Inbound / Outbound	This is the default port to connect to web interface (https) of vSolution Link Pro. If this port is blocked, connection cannot be established.
SMTP	587	SMTP	Outbound	Mail Server – Port for communication with SMTP server.
Discovery Multicast	50000	UDP	Inbound	This port is used for device discovery all available Cynap and Visualizer in the network by vSolution applications (uses Multicast IP address 239.255.255.250). If this port is blocked, device discovery is not possible
Device Discovery	50913	UDP	Inbound	This port is used for device discovery. If this port is blocked, device discovery is not possible.
For control purposes	50915	TCP	Inbound / Outbound	This port is used for control purposes. If this port is blocked, no control is possible

3.4. DHCP option 43 (or 60)

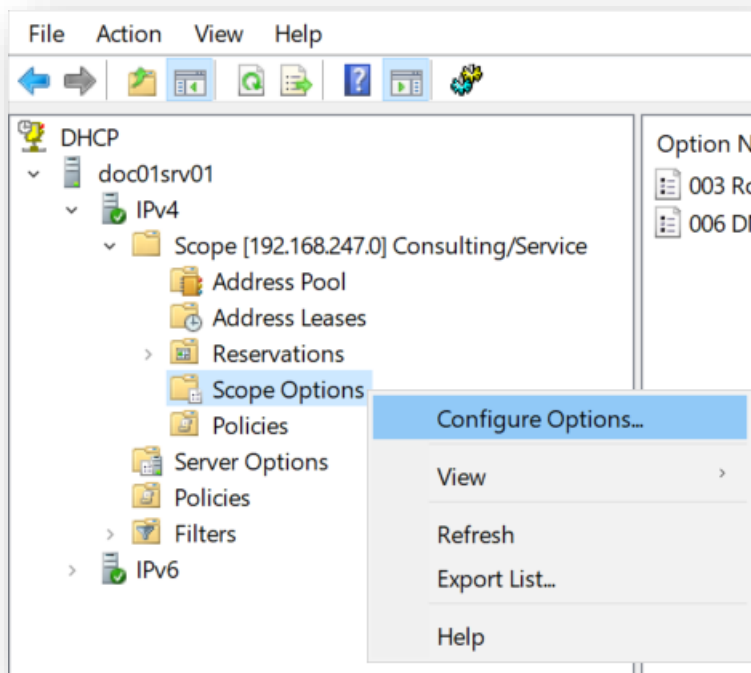
To allow the devices to register fully automated, set the DHCP option 43 (or 60) at the DHCP server in your network environment.

This option is used by clients and servers to exchange vendor specific information.

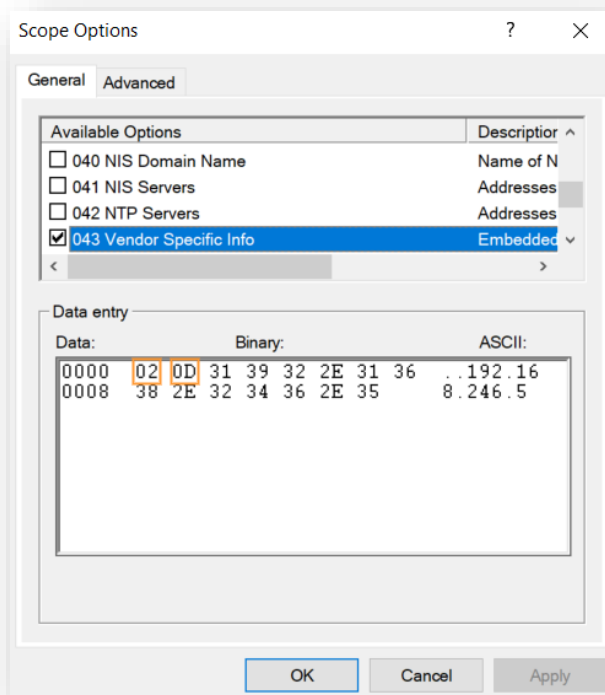
The setting can be set for one or more scopes (Scope Options) or for the entire server (Server Options).

Different versions of DHCP server operating systems vary, the following steps are describing setting up on a Windows Server 2019 Datacenter.

Open your DHCP Application and select "Configure Options" in the context menu of "Scope Options", "or "Server Options".



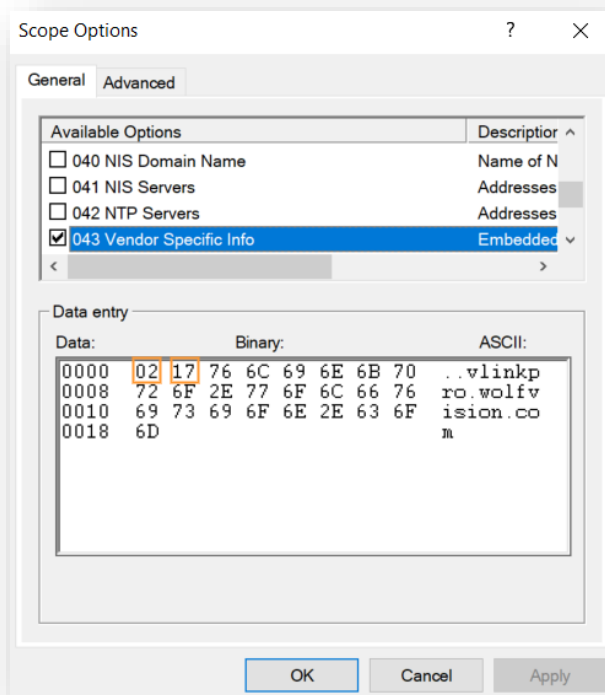
Example with IP 192.168.246.5



0x02 = Type Cynap Devices (defined by WolfVision)

0x0D = decimal 13 in hex = length of the IP address (4 octets, inclusive dots)

Example with URL vlinkpro.wolfvision.com



0x02 = Type Cynap Devices (defined by WolfVision)

0x17 = decimal 23 in hex = length of the URL

Please Note

The following Cynap systems are supporting DHCP option 43, DHCP option 60, and manually entered URL of vSolution Link Pro server in their settings:

- Cynap
- Cynap PRO
- Cynap Core
- Cynap Core PRO
- Cynap Pure
- Cynap Pure Pro
- Cynap Pure Receiver
- Cynap Pure SDM
- Cynap Pure Mini

The following Visualizer systems are supporting DHCP option 43, and manually entered URL of vSolution Link Pro server in their settings:

- VZ-2.UHD
- VZ-8.UHD
- VZ-3neo.UHD
- VZ-8neo.UHD

With default settings, listening the DHCP option is enabled.

4. On-Premise or Management Hub

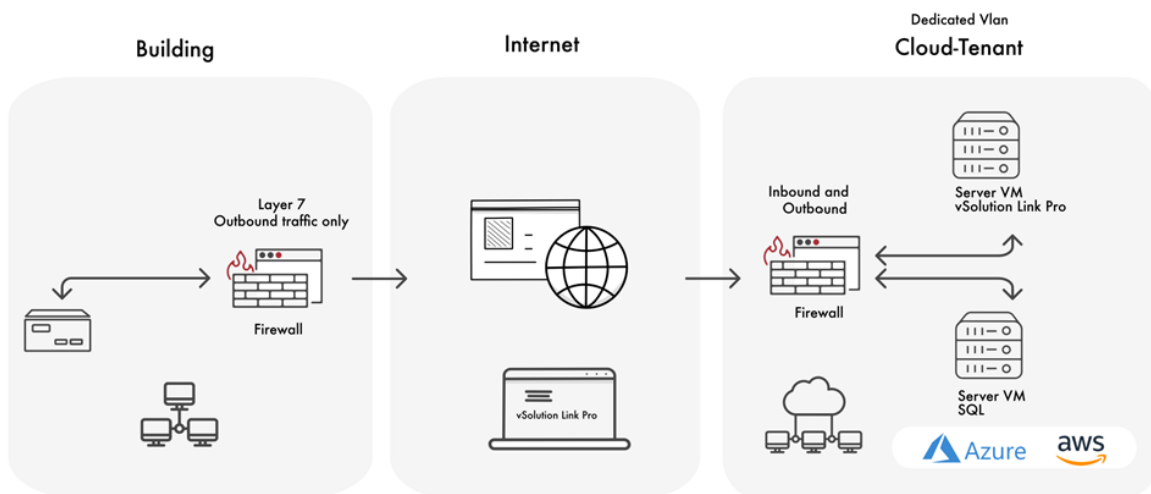
The vSolution Link Pro is a web server application and needs to be installed, preferred on a server to ensure 24/7 availability.

4.1. Hosted On-Premise (Local Installation)

When the application is hosted on-premise, this server, all Cynap and Visualizer systems and also the third party devices (desktops, workstations, tablets) have to be in the same Ethernet network.

4.2. Hosted with Management Hub (Cloud Installation)

When the application is hosted with enabled Management Hub feature, Cloud supported devices can be managed additionally.



Supported WolfVision Cynap systems in Management Hub:

- Cynap
- Cynap Pro
- Cynap Core
- Cynap Core Pro
- Cynap Pure
- Cynap Pure Pro
- Cynap Pure Receiver
- Cynap Pure SDM

For full compatibility, keep installed firmware version of all your devices up to date.

5. Server Installation (Windows IIS)

The vSolution Link Pro is a web server application and needs to be installed, preferred on a server to ensure 24/7 availability.

Different versions of IIS may vary slightly, the following steps are describing the installation on a Windows Server 2019 Datacenter (OS build 17763.1131) with .NET Core Hosting Bundle version 8.0.11. The installation on other versions may vary.

vSolution Link Pro is delivered with a standard web.config, which can be adopted, depending on your needs.

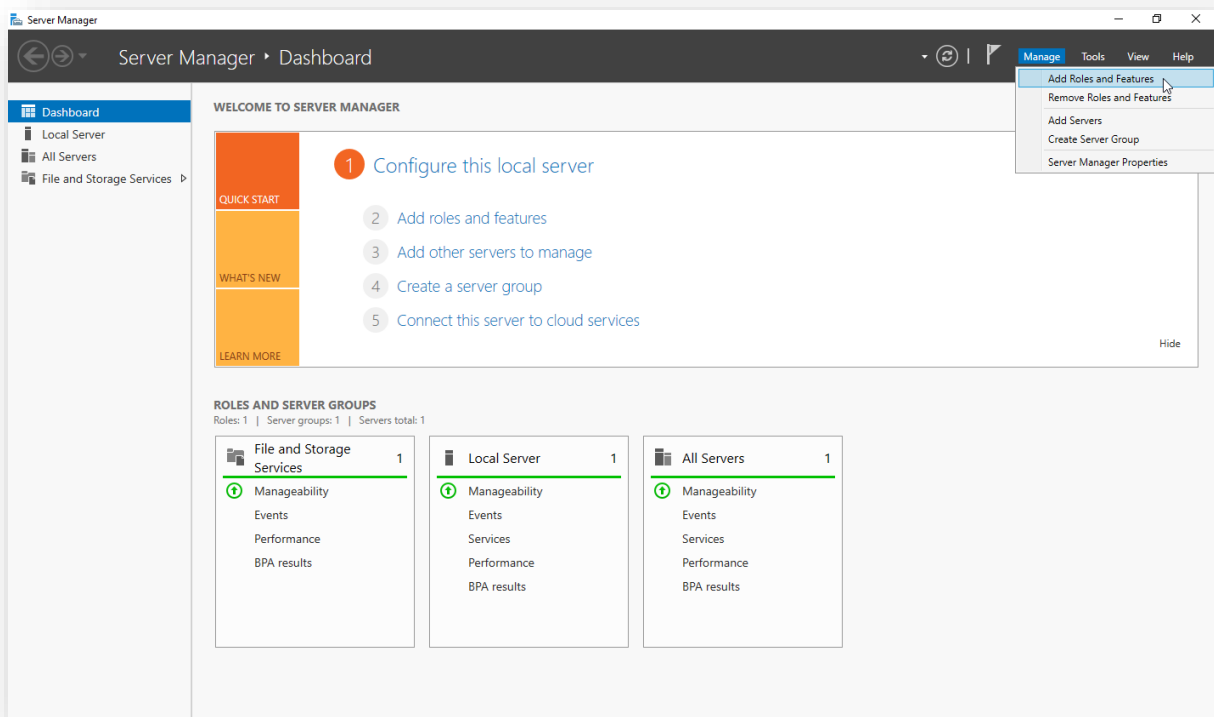
Note additional settings for using Management Hub (cloud access) feature.

5.1. Download the installation files

Download the zip archive vSolutionLinkPro_WindowsServer.zip from the WolfVision web page and unpack it.

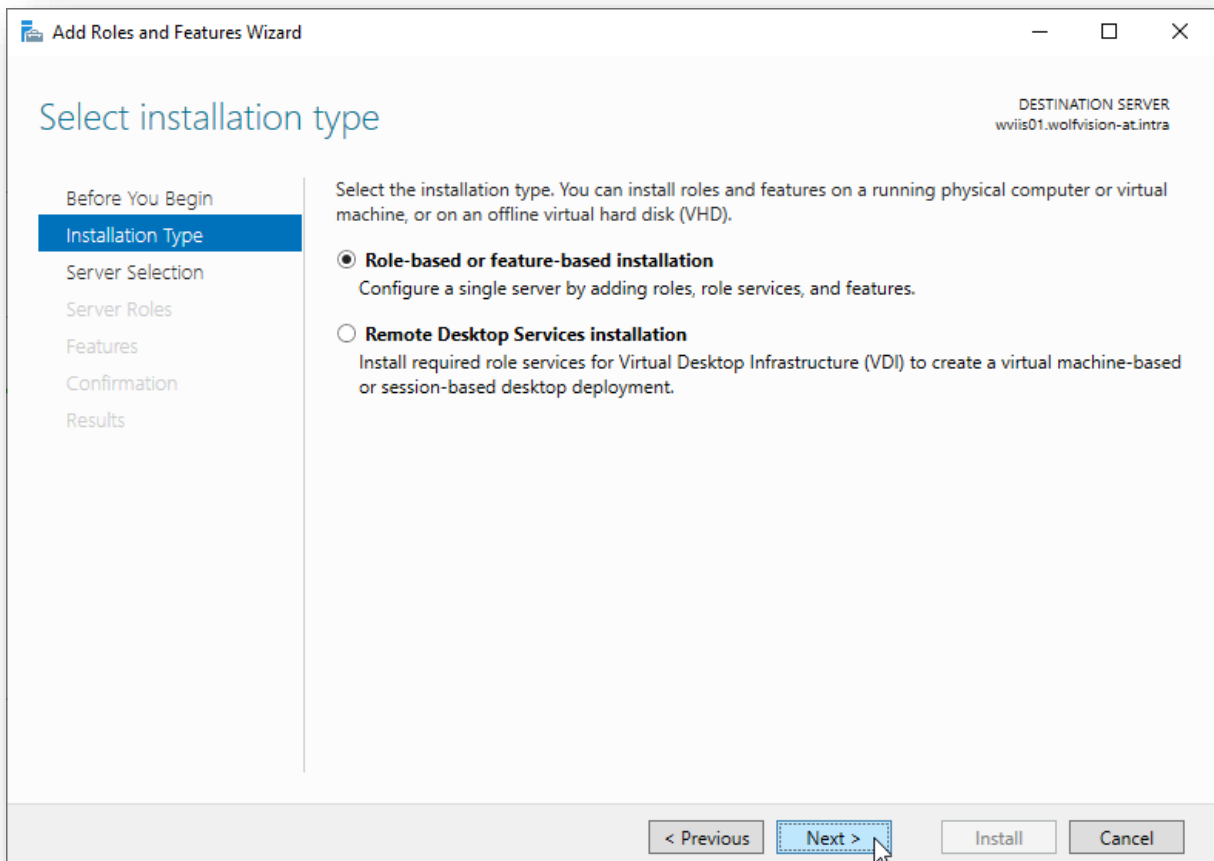
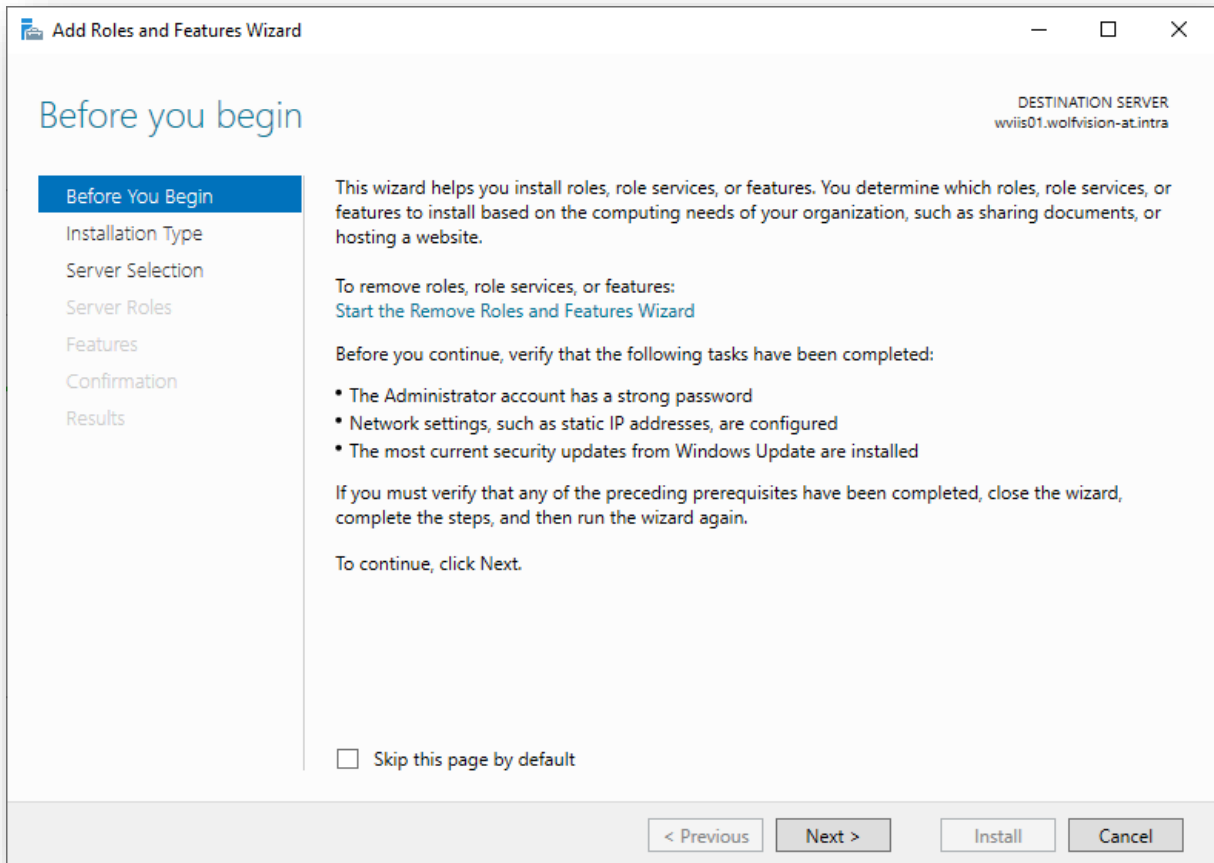
5.2. Add IIS functionality

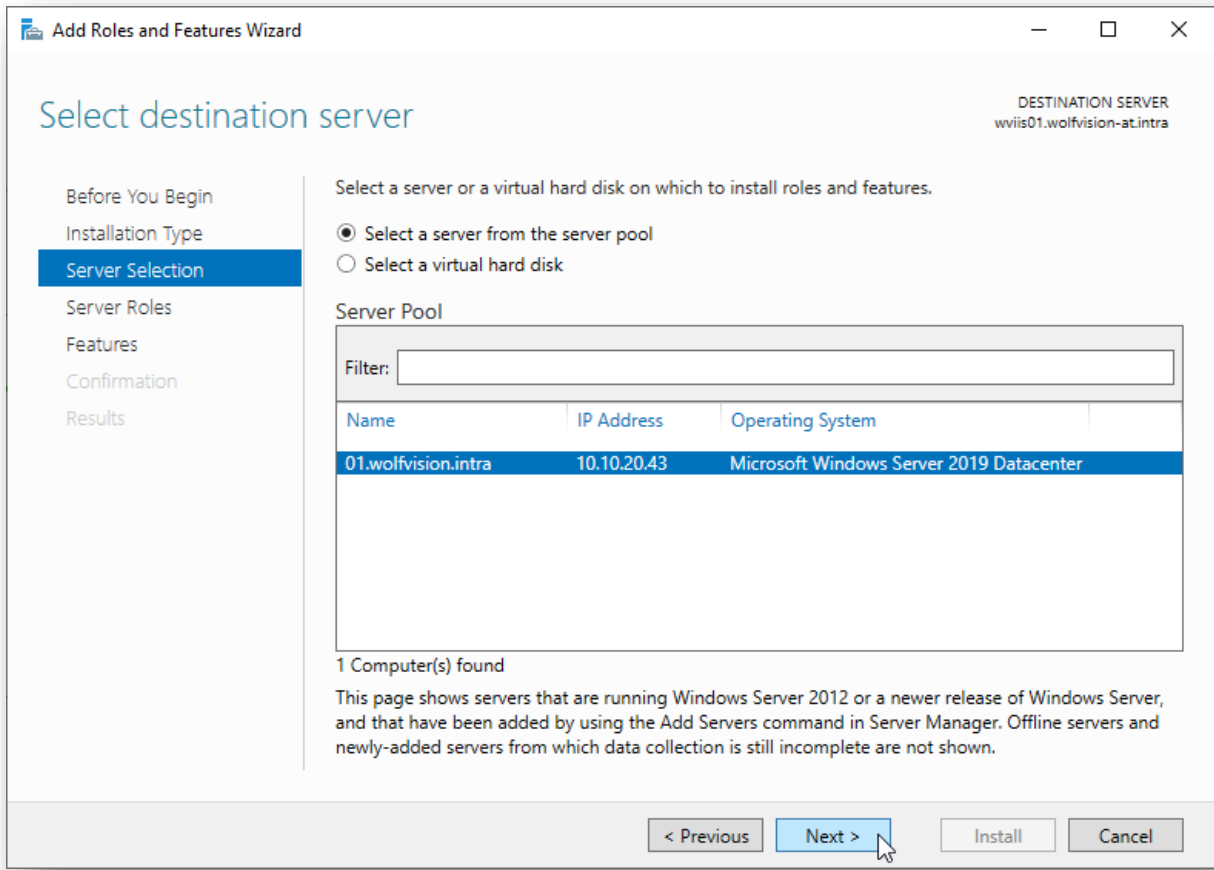
Open the Server Manager Dashboard and Add Roles and Features:



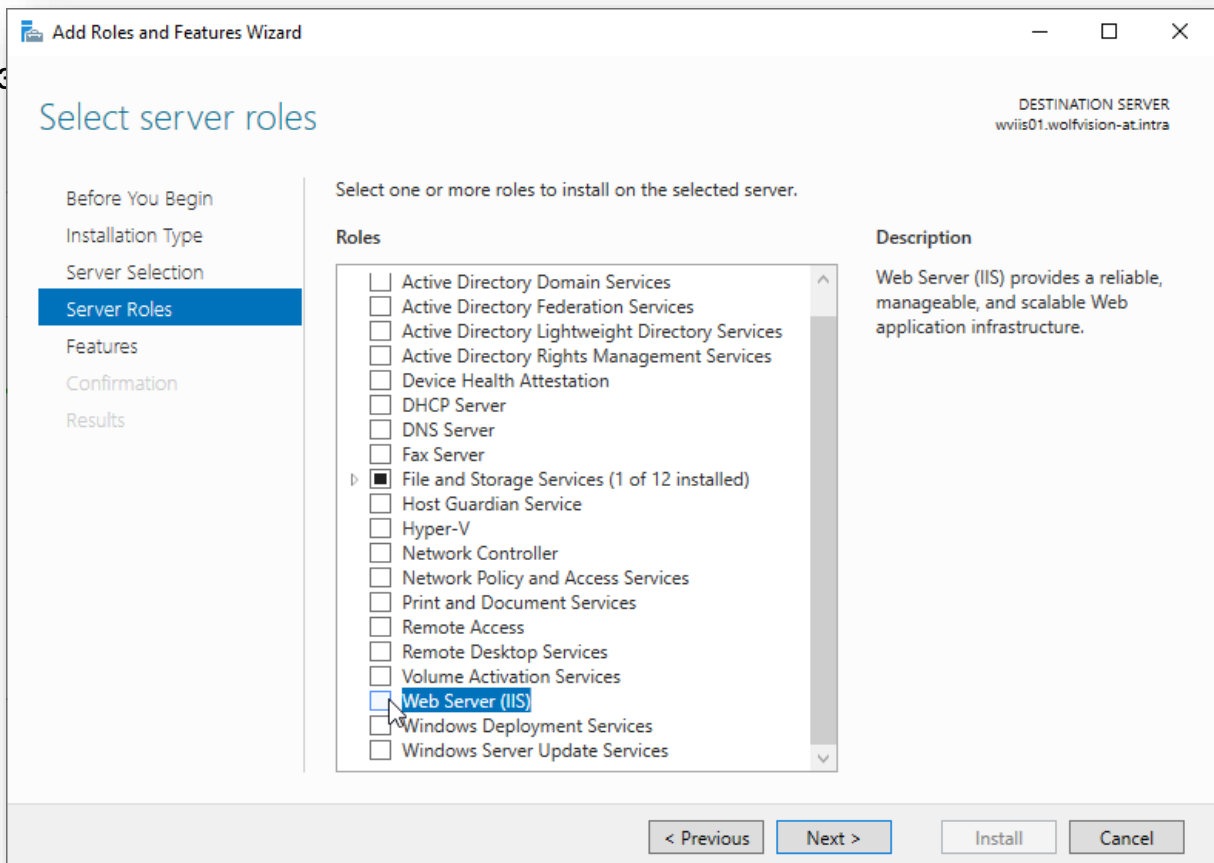
Important

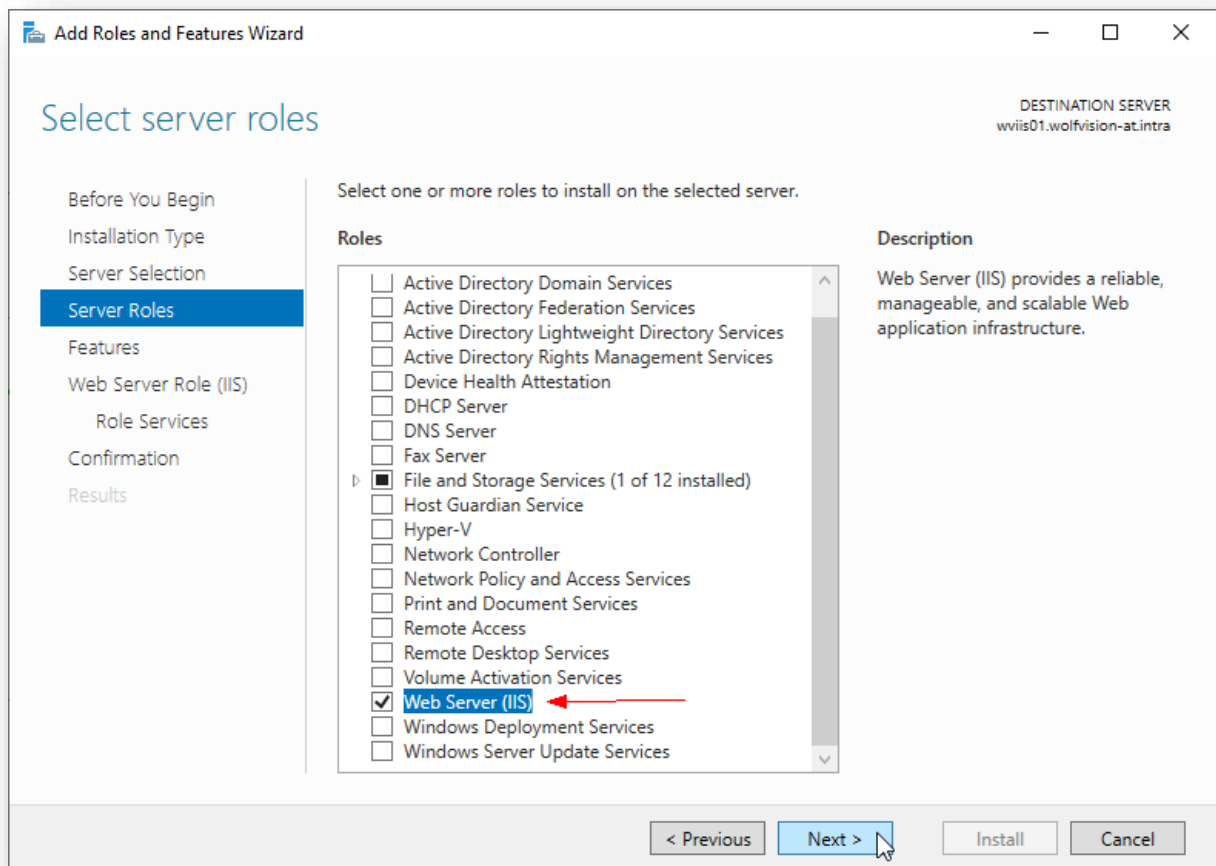
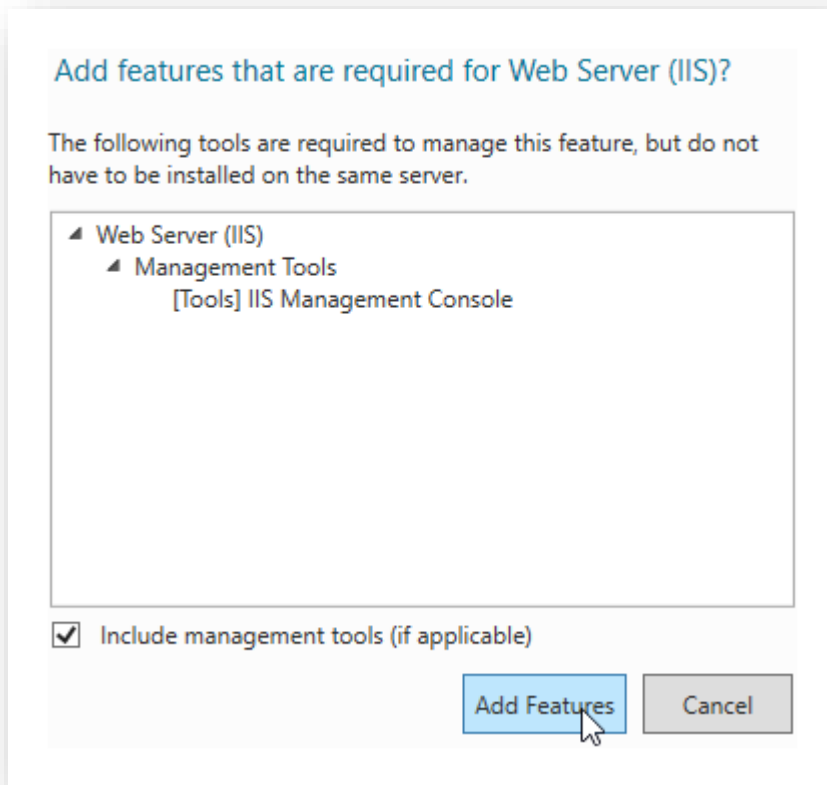
WebDAV role should stay disabled for vSolution Link Pro server for full functionality.

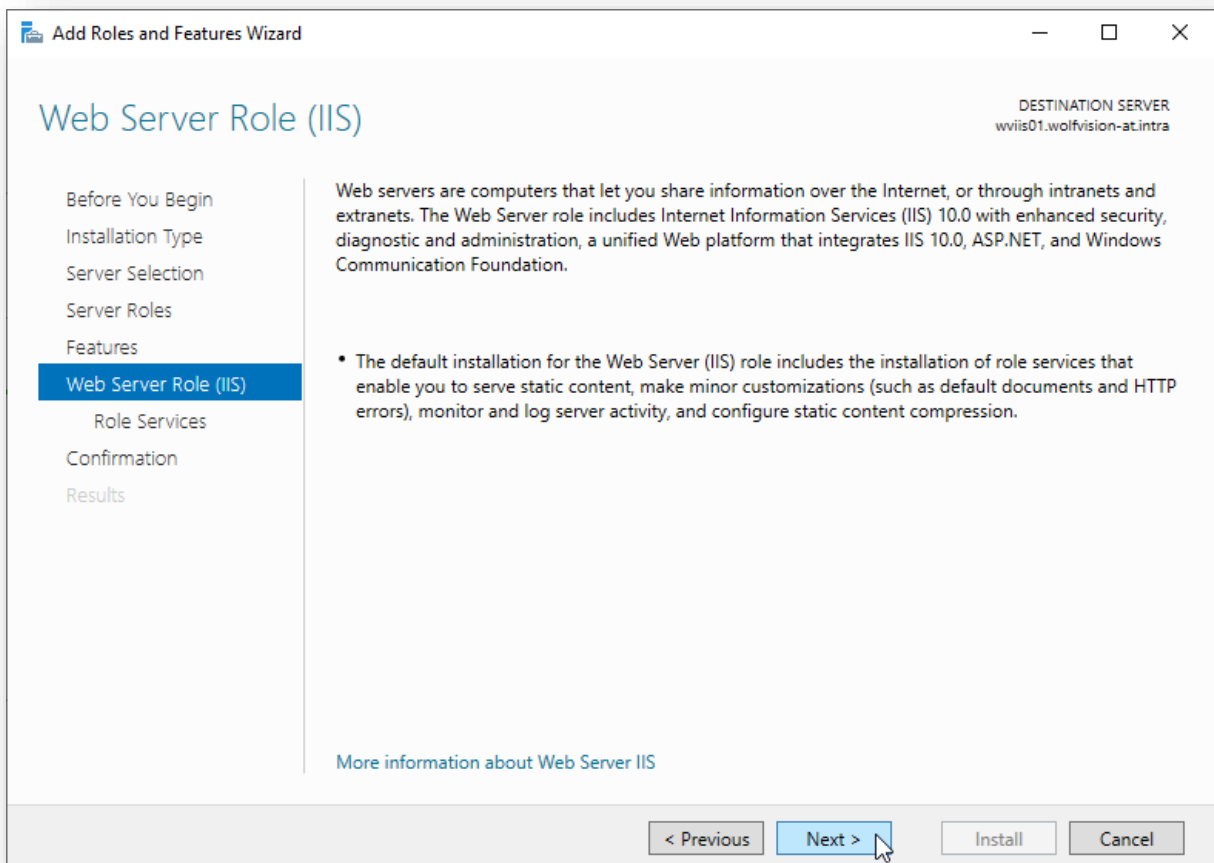
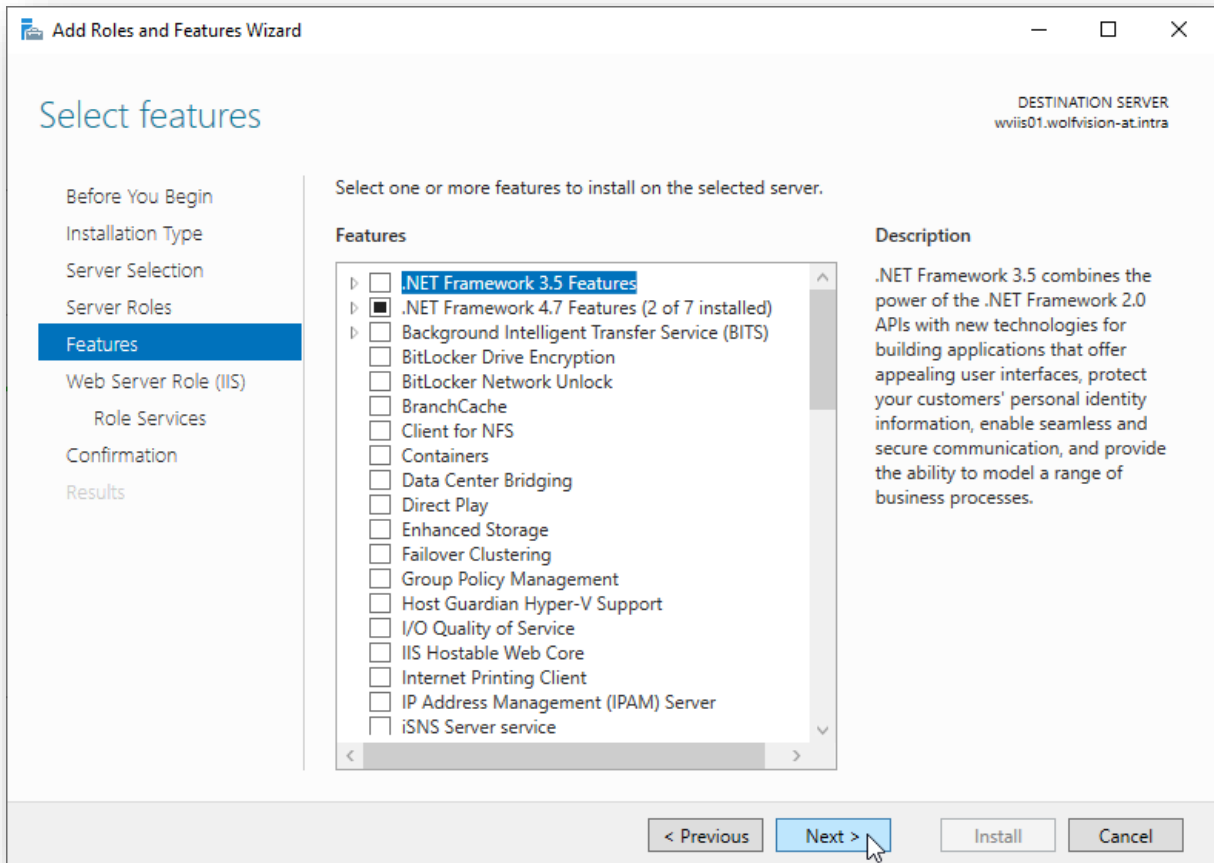




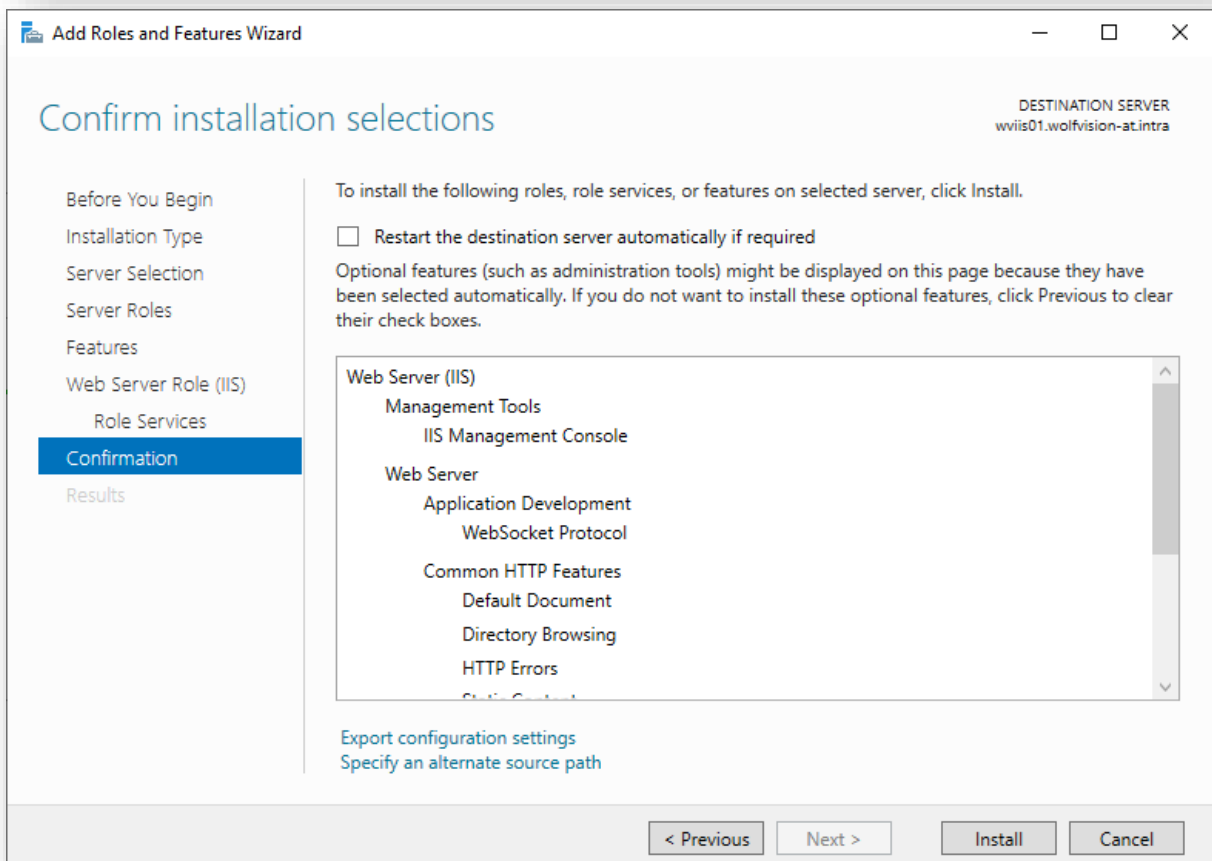
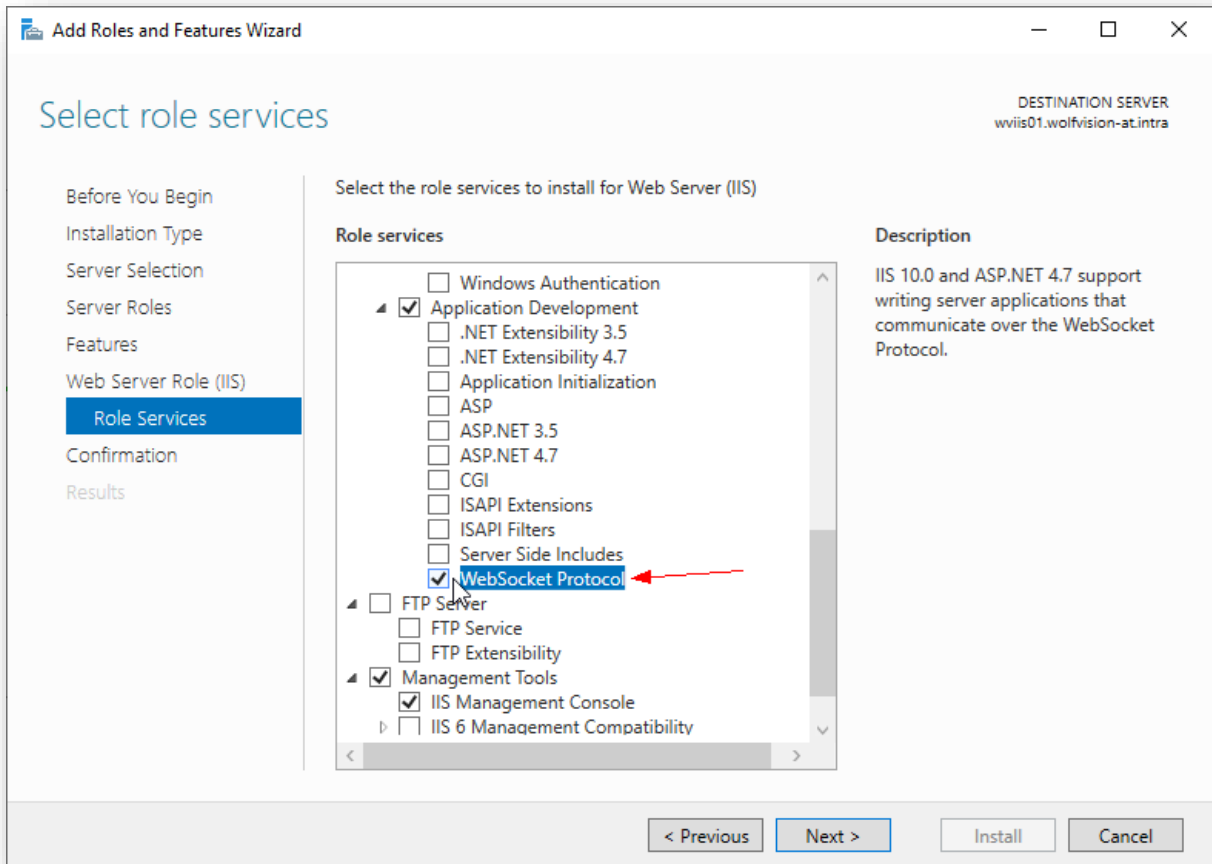
5.3

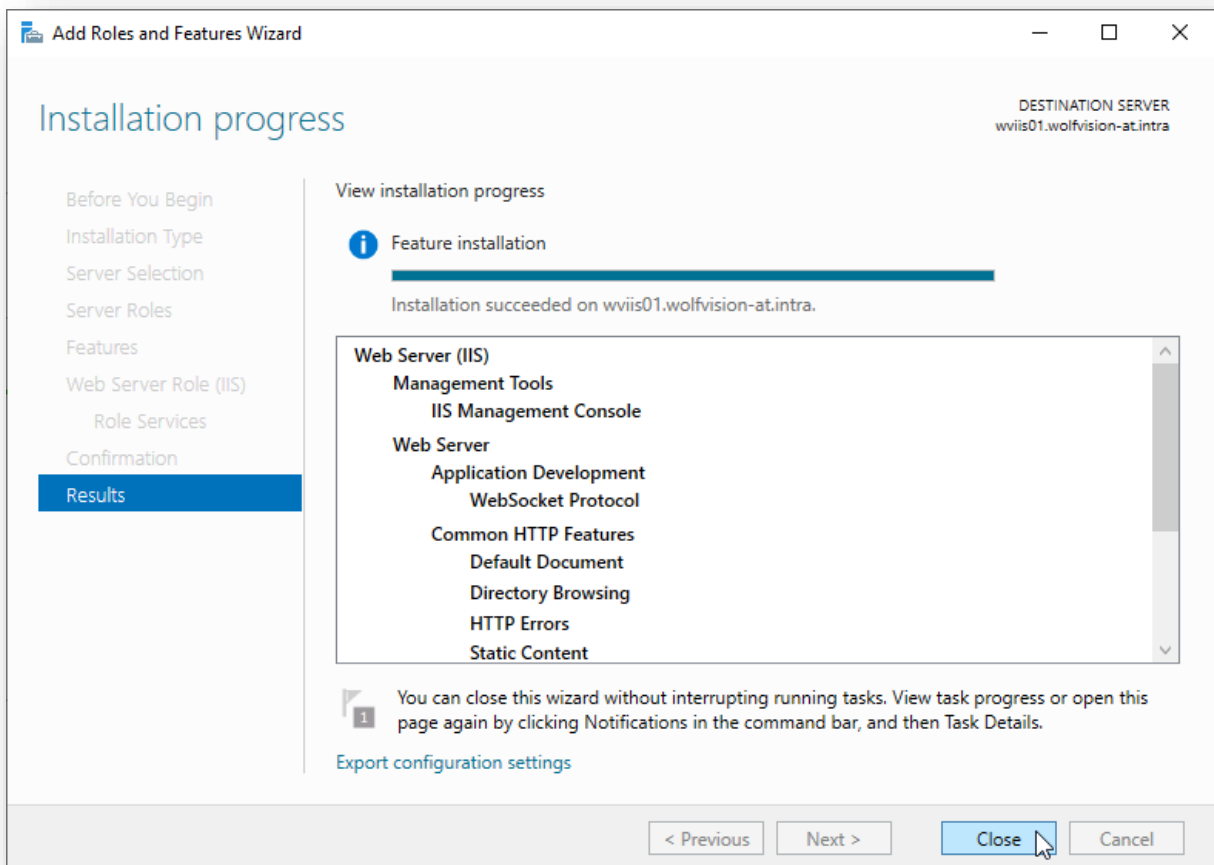
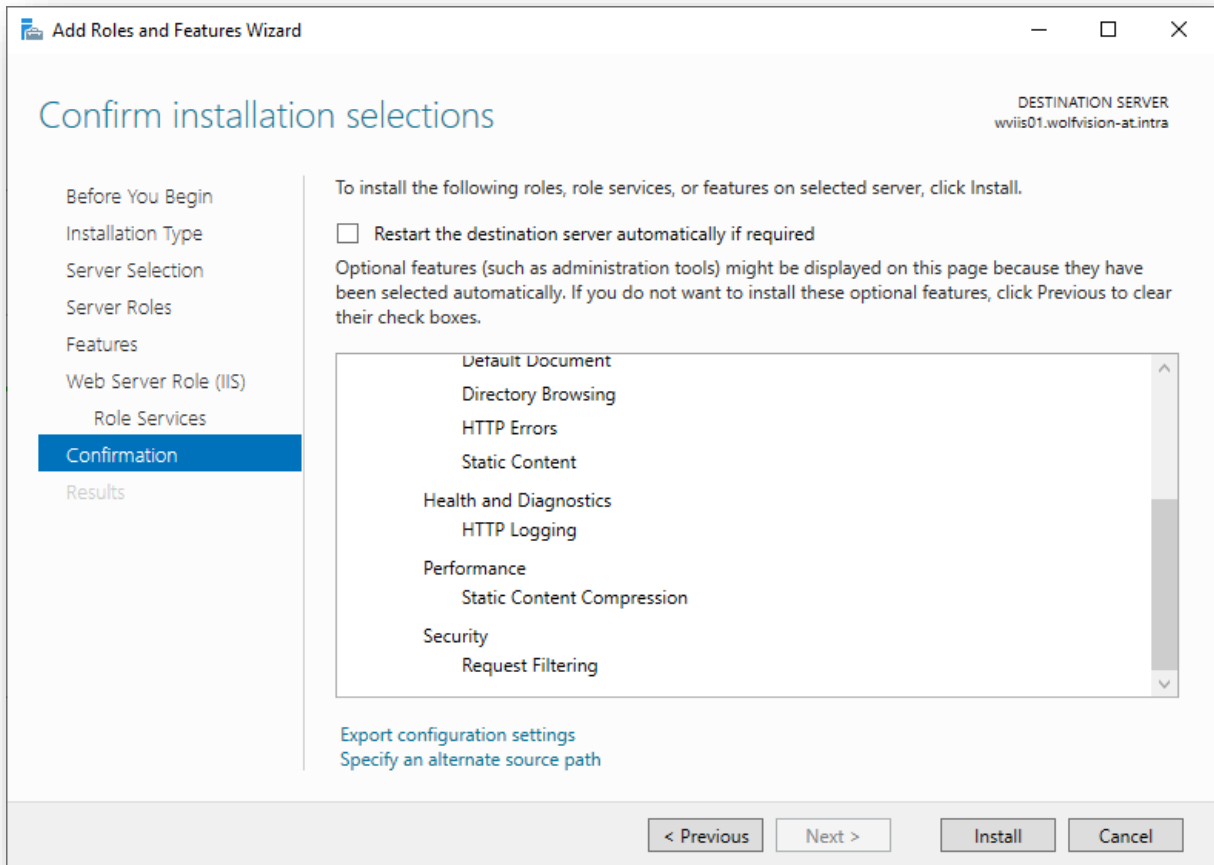






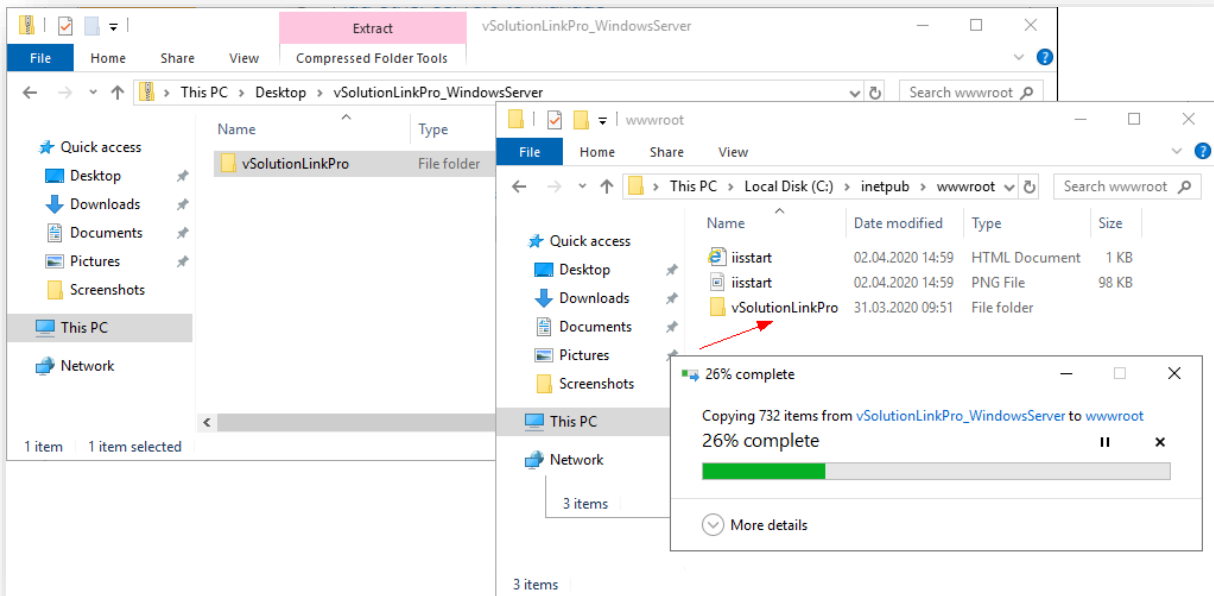
5.4. Select WebSocket Protocol (Application Development, sub item of IIS Web Server)



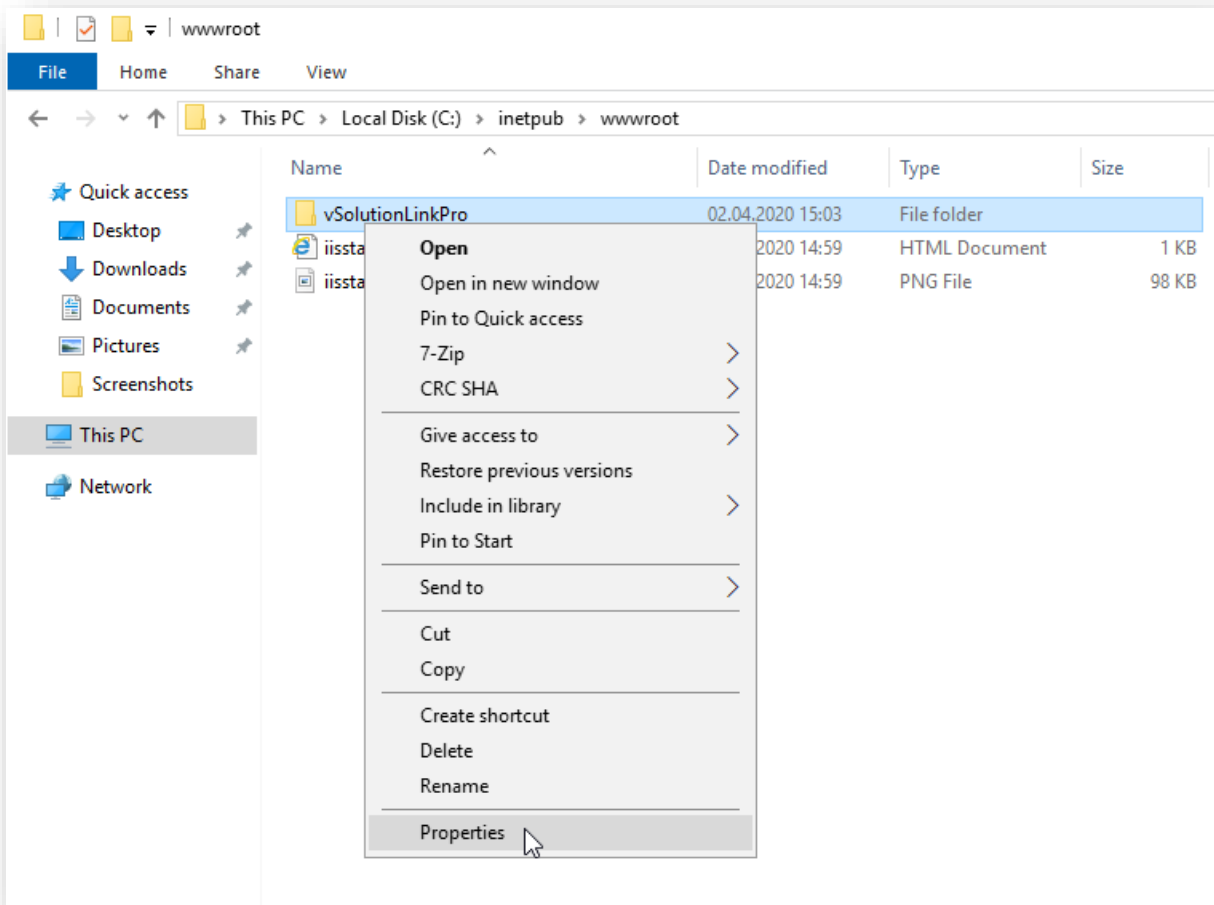


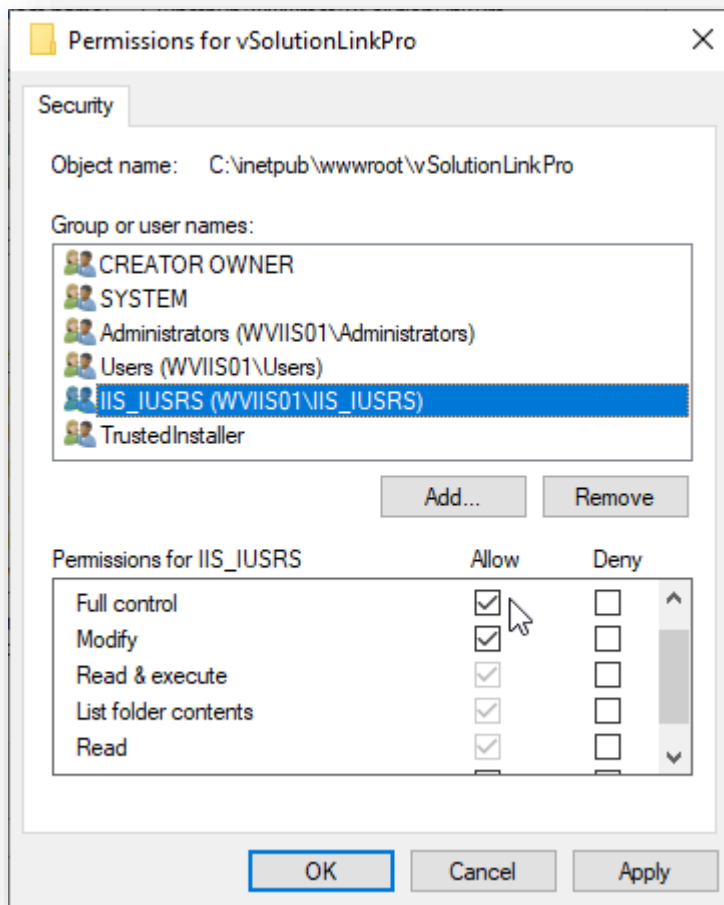
5.5. Prepare file structure

Copy the unzipped folder vSolutionLinkPro_WindowsServer to c:\inetpub\wwwroot

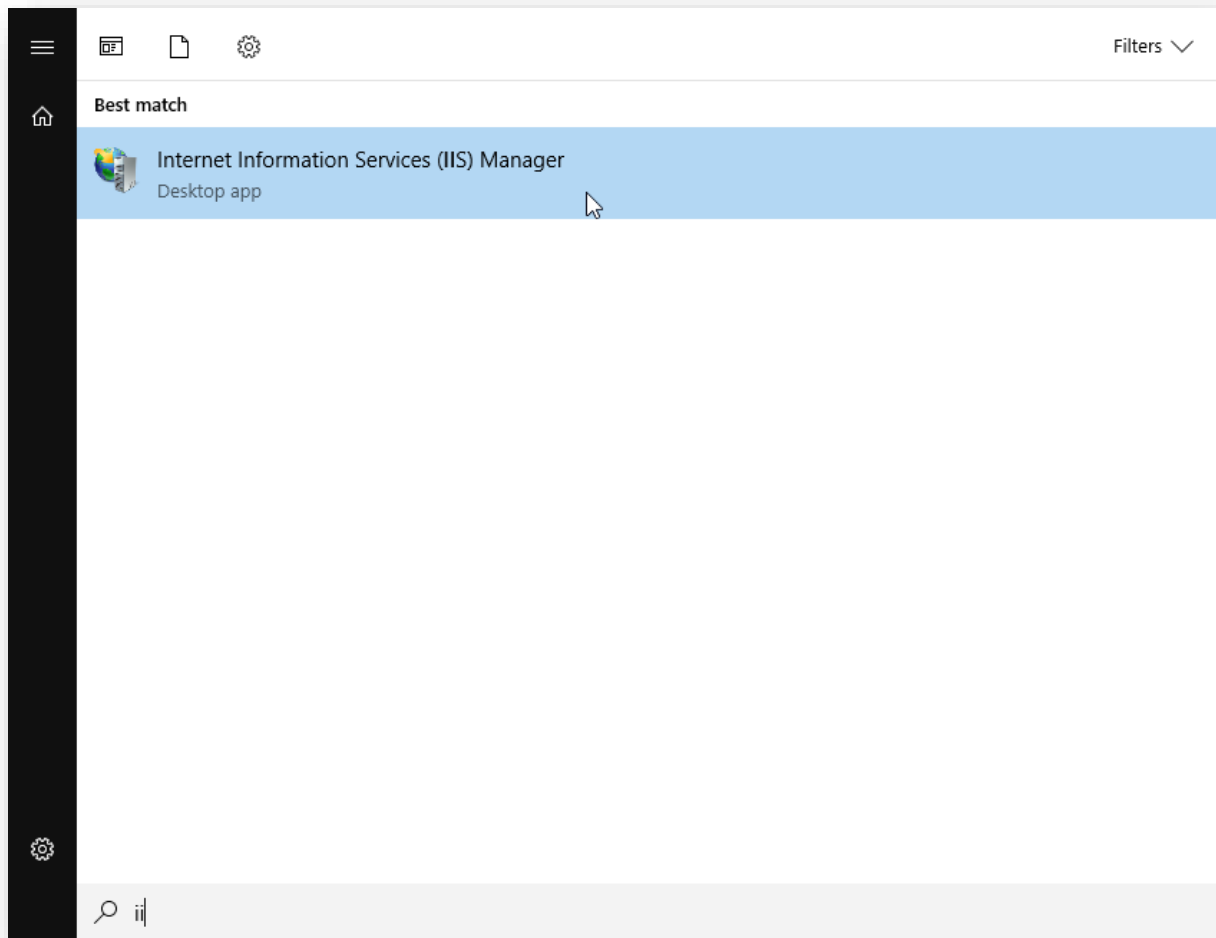


Change properties to manage permissions of the IIS to allow full control



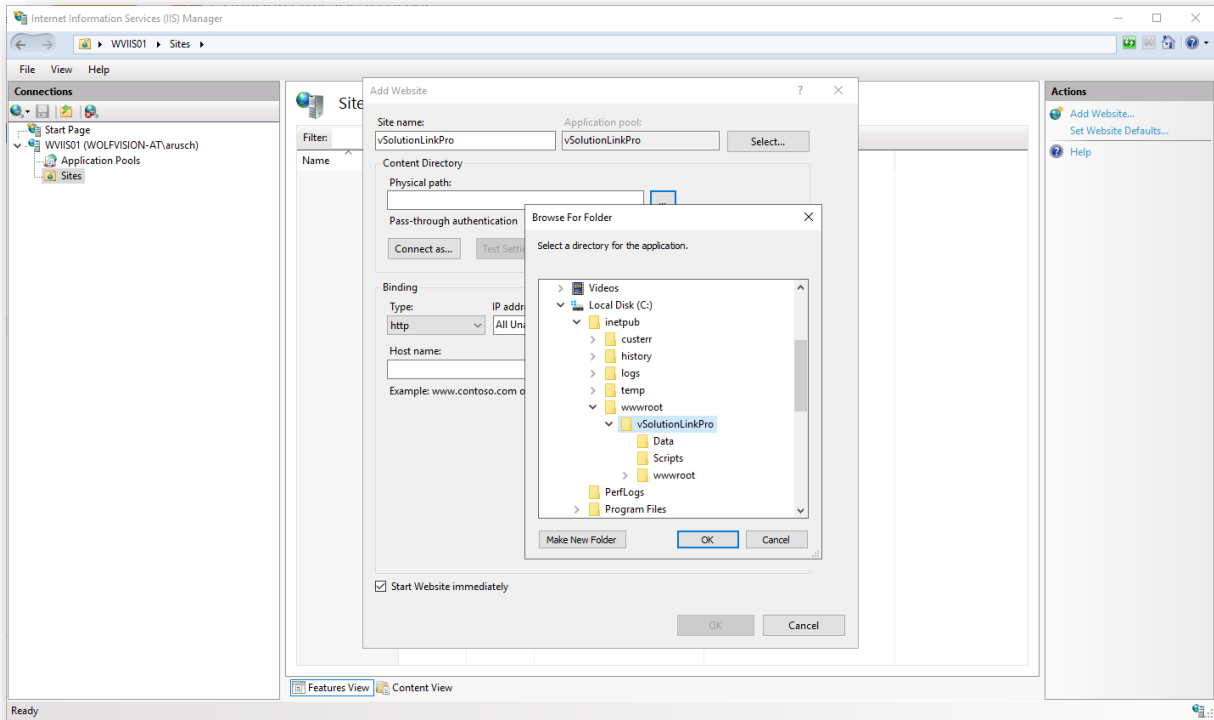


5.6. Start Internet Information Services (IIS) Manager

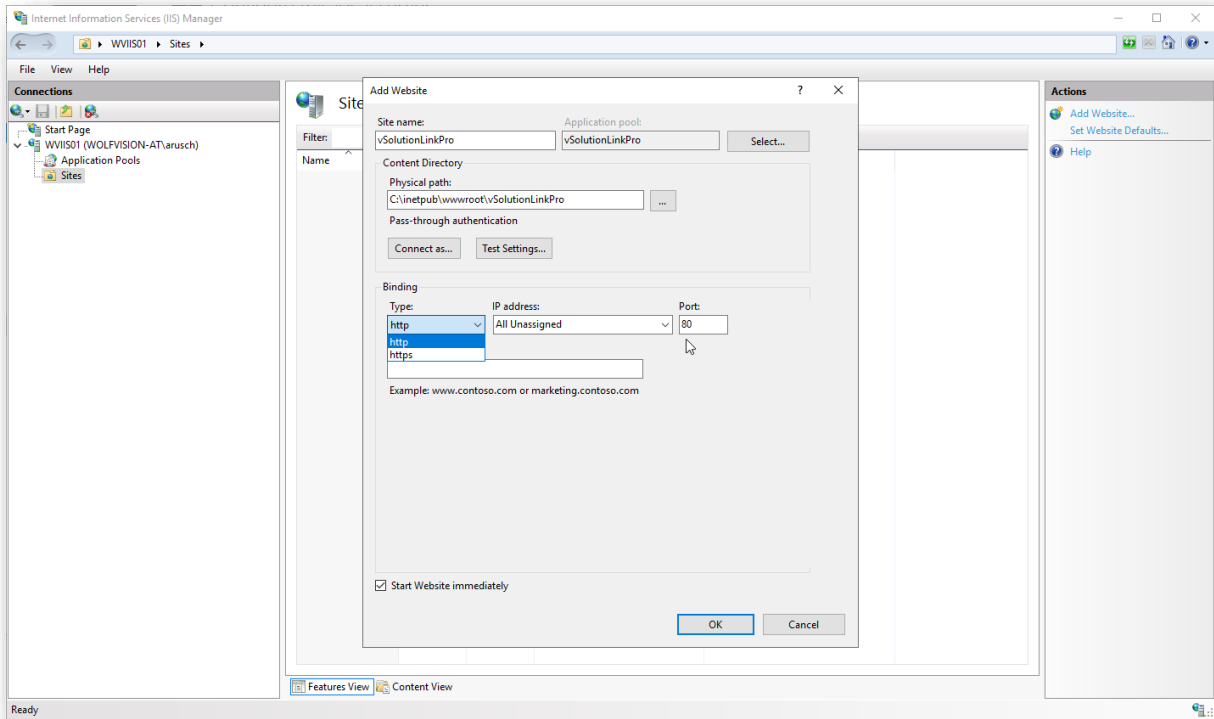


5.7. Setup IIS

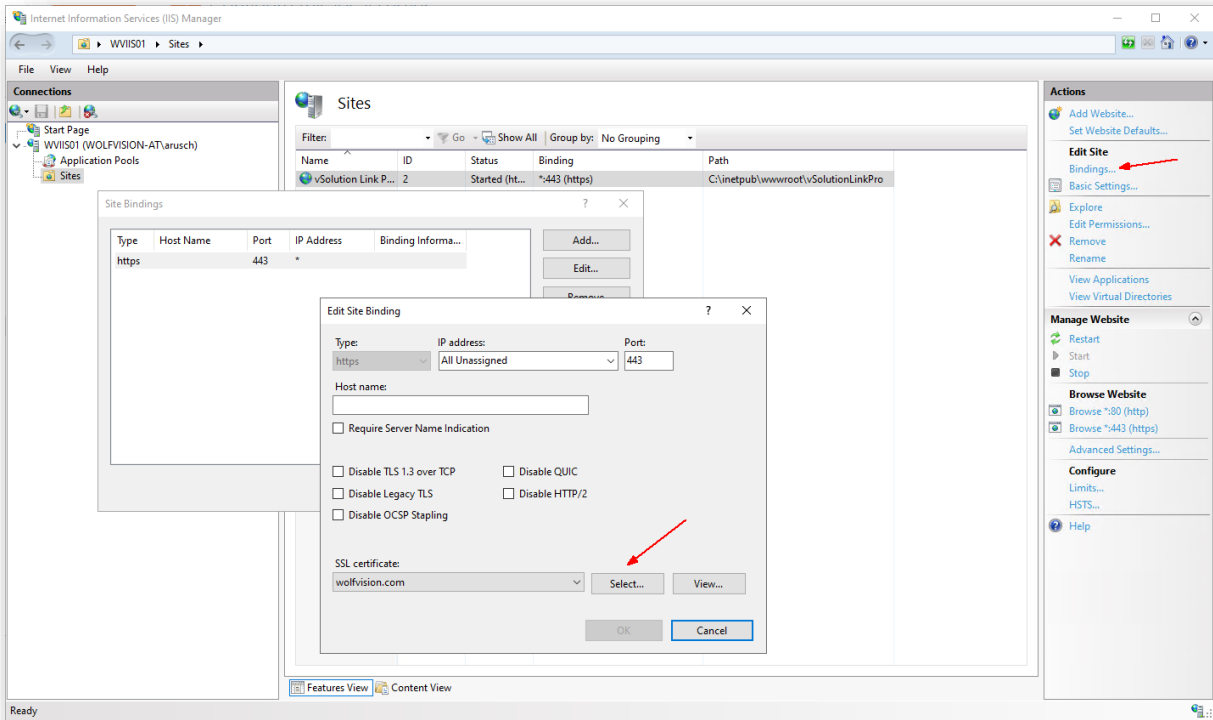
Manage sites of IIS and add the physical path



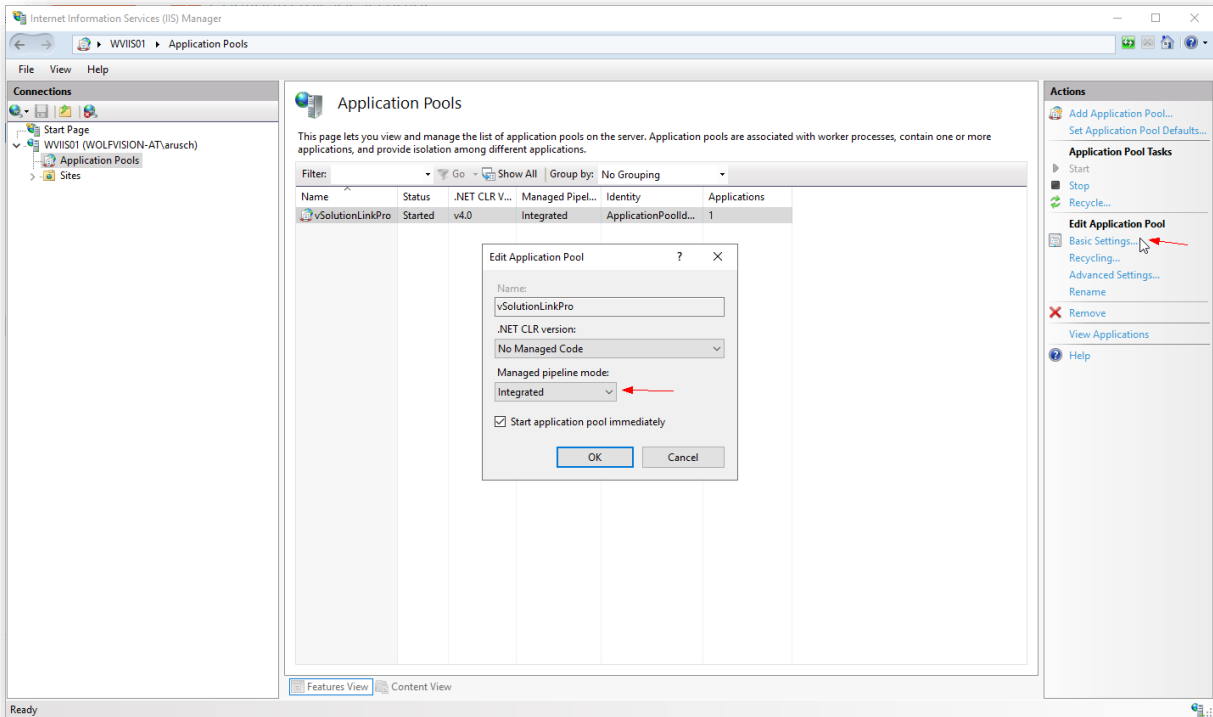
Restrict access to https and check the used port.
This setting is required prior activating Management Hub feature.



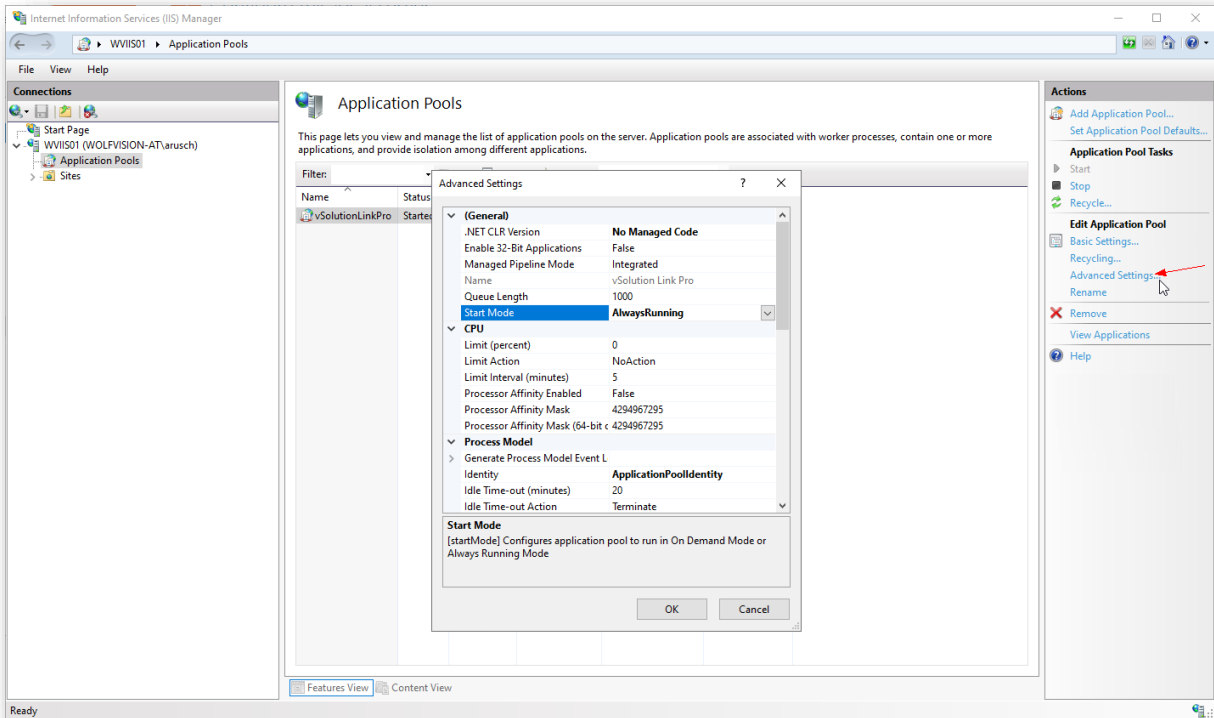
Define your valid SSL certificate for proper https connection.
This setting is required prior activating Management Hub feature.



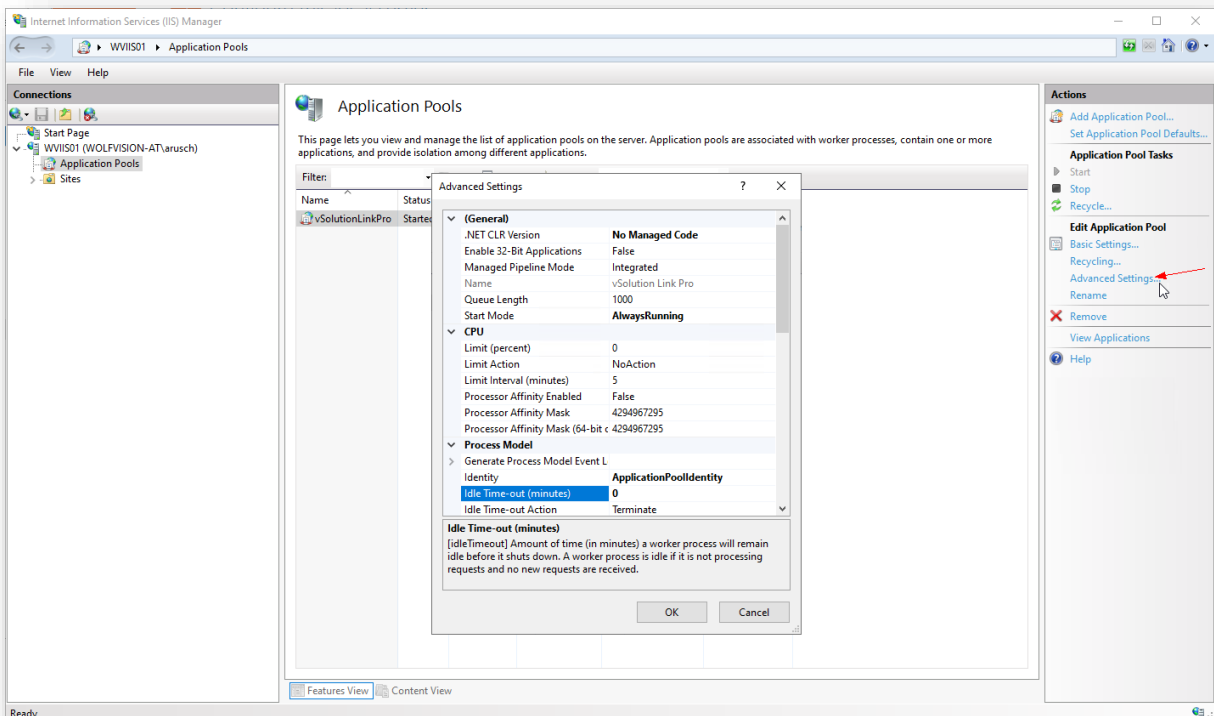
Change .NET CLR version in Basic Settings to "No Managed Code"
Change Managed pipeline mode to "Integrated".



Change Start Mode in Advanced settings to "AlwaysRunning" to allow 24/7 operation



Change Idle Time-out (minutes) in Advanced settings to "0"

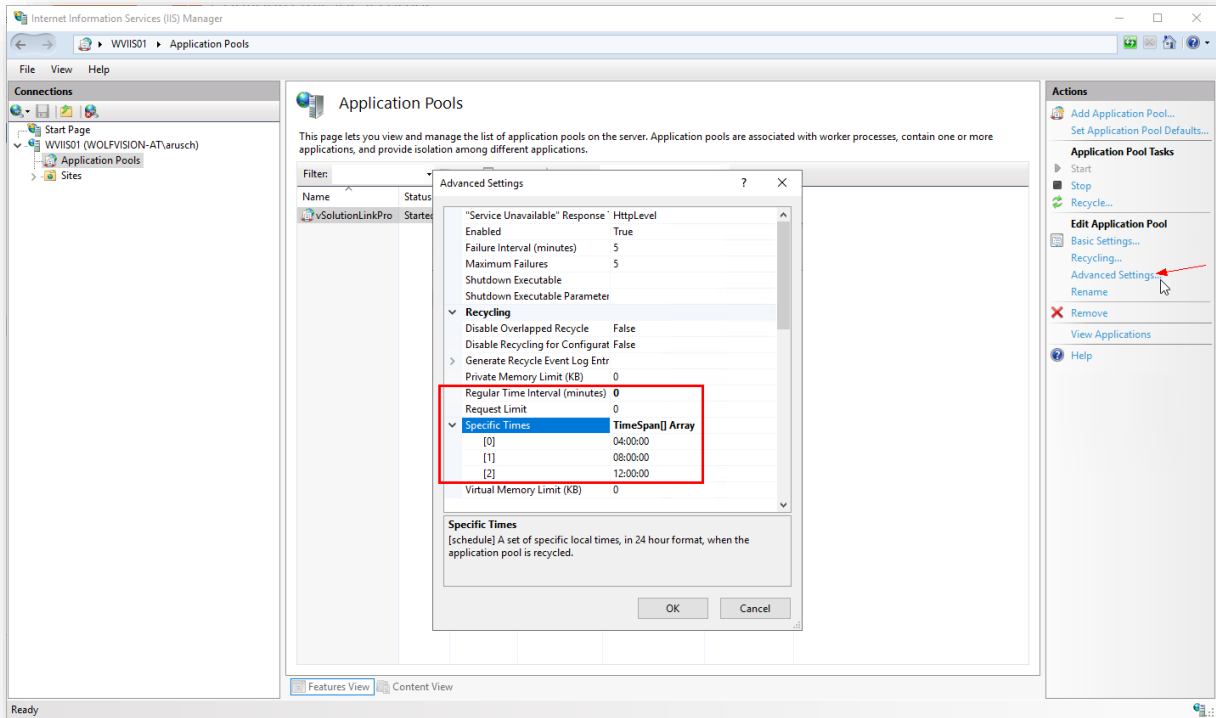


Please note

When the IIS is running OnDemand, it stops when:

- No vSolution Link Pro window is opened in a browser window at any client
- No Management Hub connection is opened
- No device uses calling home.

Adapt Regular Time Interval (minutes) in Advanced settings according to your needs



6. Installing .NET Core Windows Server Hosting

Install the .NET Core Hosting Bundle.

The application was tested with .NET version 8.0.11:

<https://dotnet.microsoft.com/en-us/download/dotnet/thank-you/runtime-aspnetcore-8.0.11-windows-hosting-bundle-installer>

For further details about IIS, please visit:

<https://docs.microsoft.com/en-us/aspnet/core/host-and-deploy/iis/?view=aspnetcore-8.0>

Stop and restart the service at Application Pool Tasks at IIS Manager.

6.1. Adopt appsettings.json

The file appsettings.json allows modifying all settings offline by using a common text editor.

The most important settings are accessible at the graphical user interface (Configuration - Settings).

Using Management Hub (Cloud)

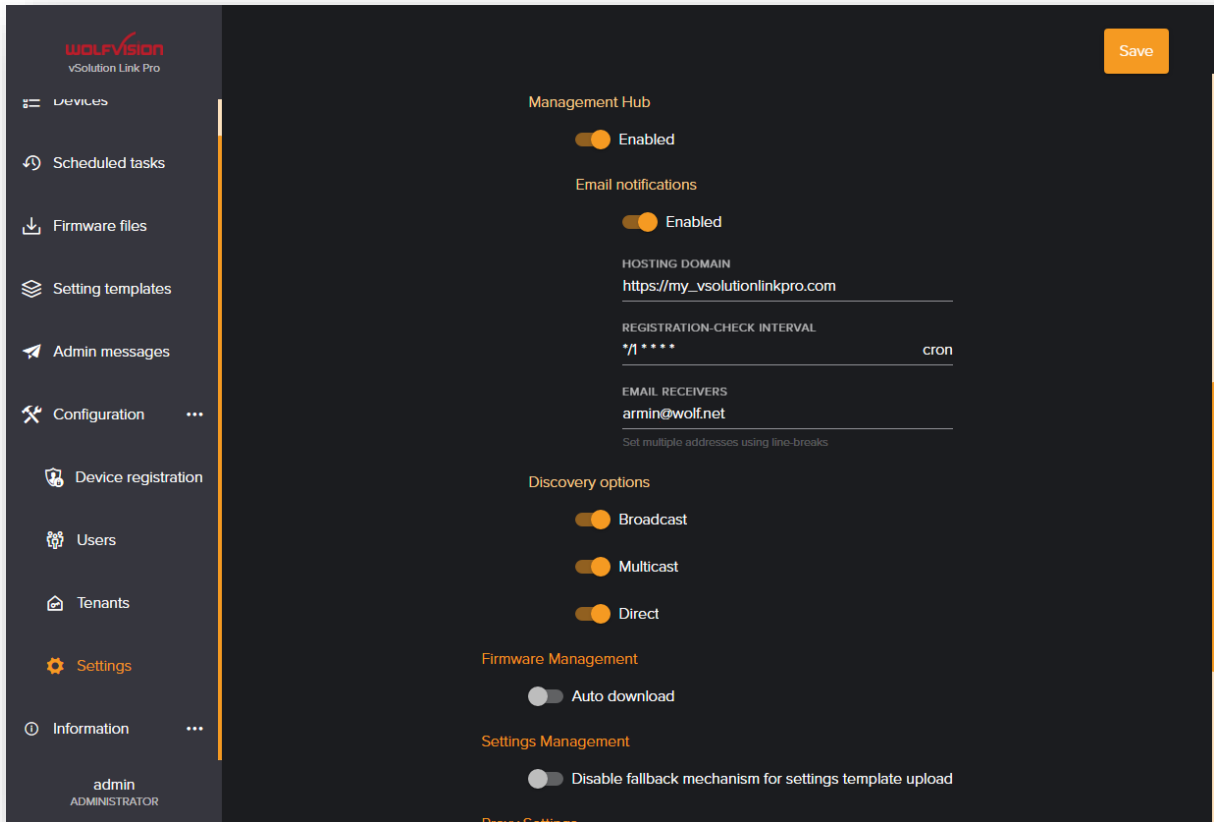
"UseHttps" in section "Hosting" has to be set to "true".



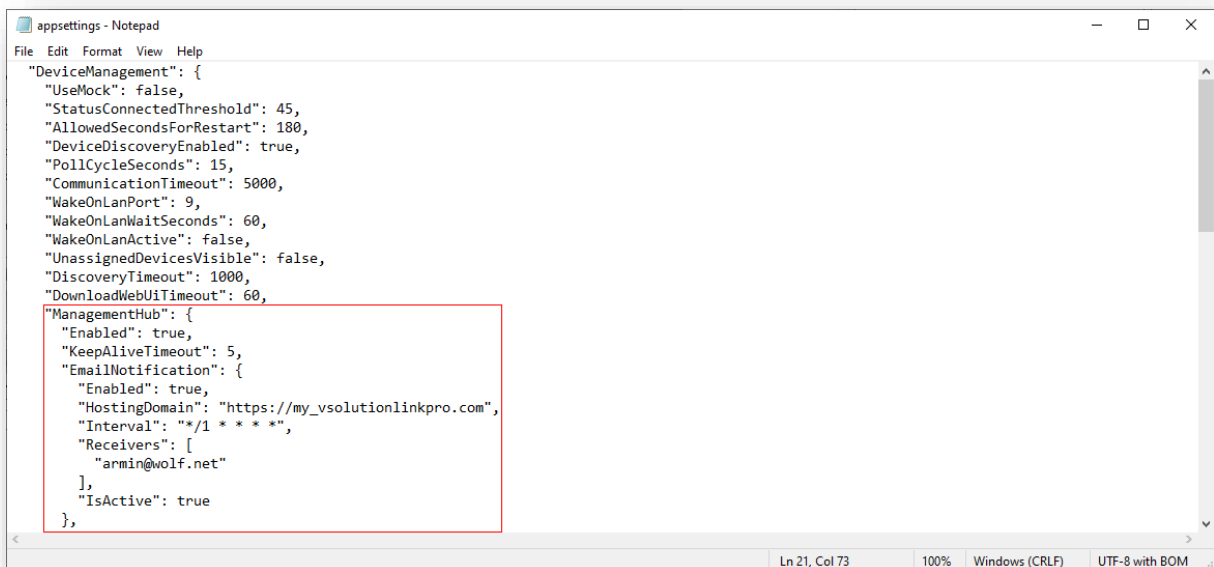
```
appsettings.json - Notepad
File Edit Format View Help
{
  "Hosting": {
    "AppName": "vSolution Link Pro",
    "Port": 80,
    "HttpsPort": 443,
    "UseHttps": true,
    "CertificatePath": "C:\\ProgramData\\WolfVision\\vSolution Link Pro\\certificate.pfx",
    "CertificateKey": "Dvx_pGpc4z2e_F4m_Dp@",
    "EnableSwagger": false,
    "Enable2FA": false,
    "MaxRequestBodySize": null
  },
  "MailServer": {
    "ProviderType": 0,
    "MailServer": "",
    "MailPort": 587,
    "Sender": "",
    "Username": "",
    "Password": "P@ssw0rd",
    "UseAuthentication": false,
    "ConnectionSecurity": 1,
  }
}
```

6.2. Activate Management Hub (optional, depending on setup)

The Management Hub for Cloud support needs to be enabled in the setting at initial start:



Alternative, activate the Management Hub in the file appsettings.json and adopt all settings according your needs manually:

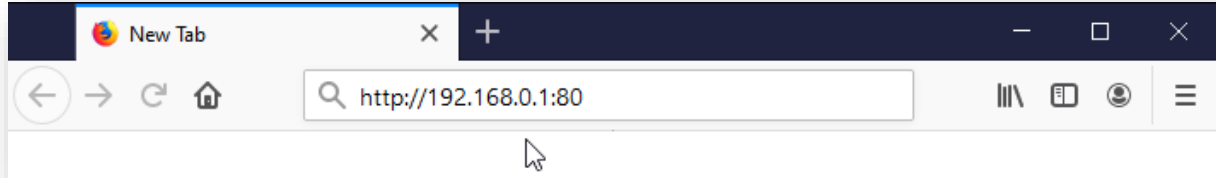


(example)

7. Start the application

To start vSolution Link Pro, open the browser of the workstation and enter the IP address of the server.

Example URL **http://192.168.0.1:80**



For security reasons, the default password has to be changed at first login.
Please note, after inactivity of 30 minutes, you will be logged out automatically.

7.1. Device Requirements

To access the devices, they have to be online **and** reachable!

Cloud-connected devices (Management Hub) are keeping a secure websocket connection (WSS) open to allow managing.

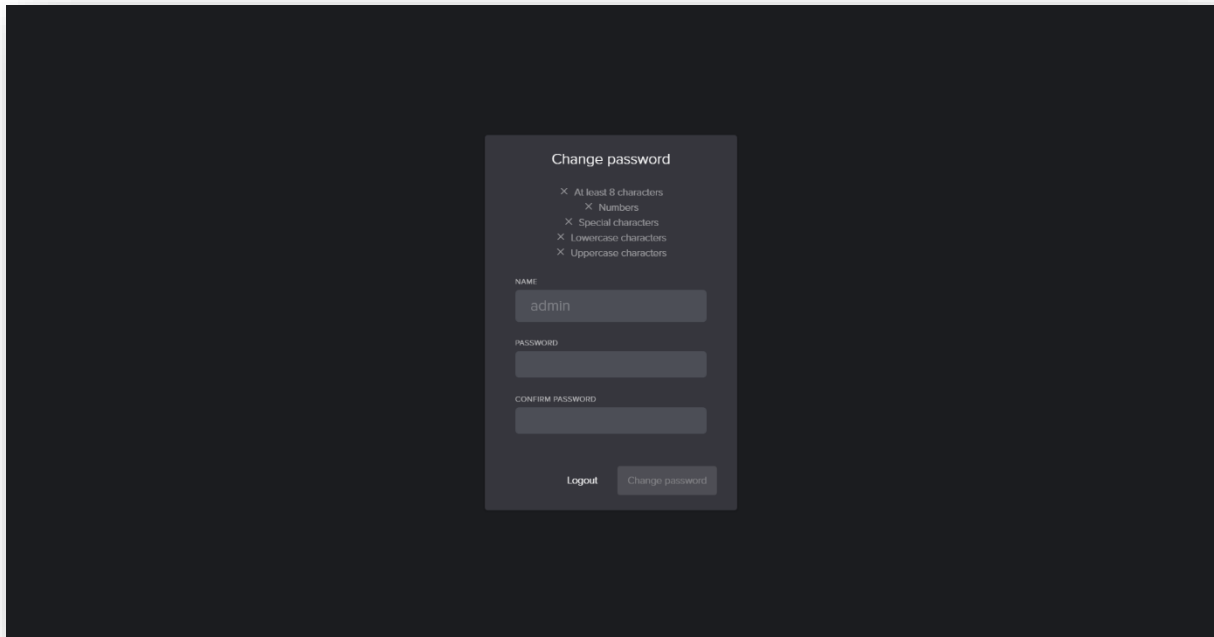
E.g. Cynap devices will disable their LAN ports when powering down by default and can be powered up by using the Wake on LAN functionality. For network infrastructures with blocked Wake on LAN, use power down mode Power Save to keep the LAN port of your Cynap system active.

Depending on network infrastructure and due to multiple network ports, IP routing has to be specified to route the network traffic.

When using WolfVision Visualizer devices, use power down modes Normal or ECO to keep the LAN port active.

7.2. First Login - Change Password (“admin” at initial start)

When you login the first time, the password must be set:



Change password

- × At least 8 characters
- × Numbers
- × Special characters
- × Lowercase characters
- × Uppercase characters

NAME
admin

PASSWORD

CONFIRM PASSWORD

Logout Change password

When the blank Windows server IIS page should be opened, check the used ports and restart the server.

8. Updating vSolution Link Pro

Stop vSolution Link Pro at IIS Manager.

Backup the `Data` folder from your current installation folder.

Unpack the zip archive of the new version and copy the full content to the installation folder.

Copy the content from your previously saved content of `Data` to the current `Data` folder.

8.1. Important

When the installation folder "vSolutionLinkPro" was exchanged, the permission has to be renewed (see chapter 5.5 Prepare file structure).

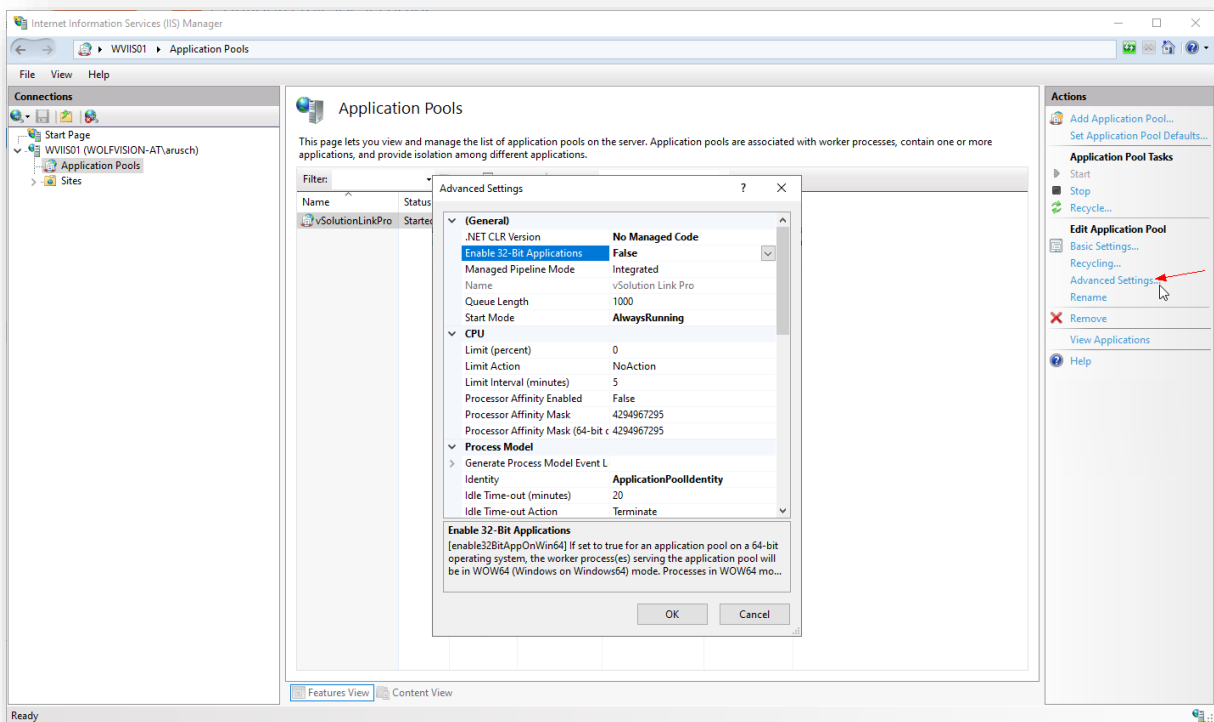
8.1. Complete the update

Start the vSolution Link Pro at the IIS Manager.

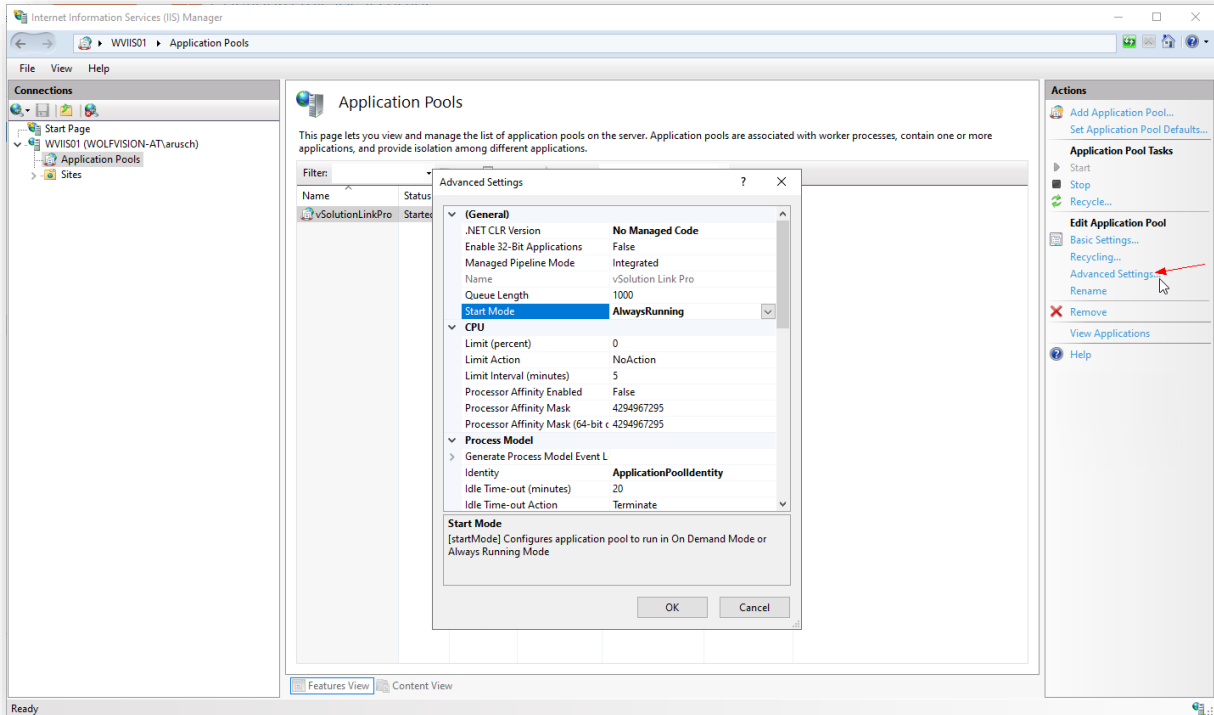
8.2. Updating from version v1.8.0 (or earlier)

When vSolution Link Pro version 1.8.0, or earlier was installed previously, the application pool has to be modified.

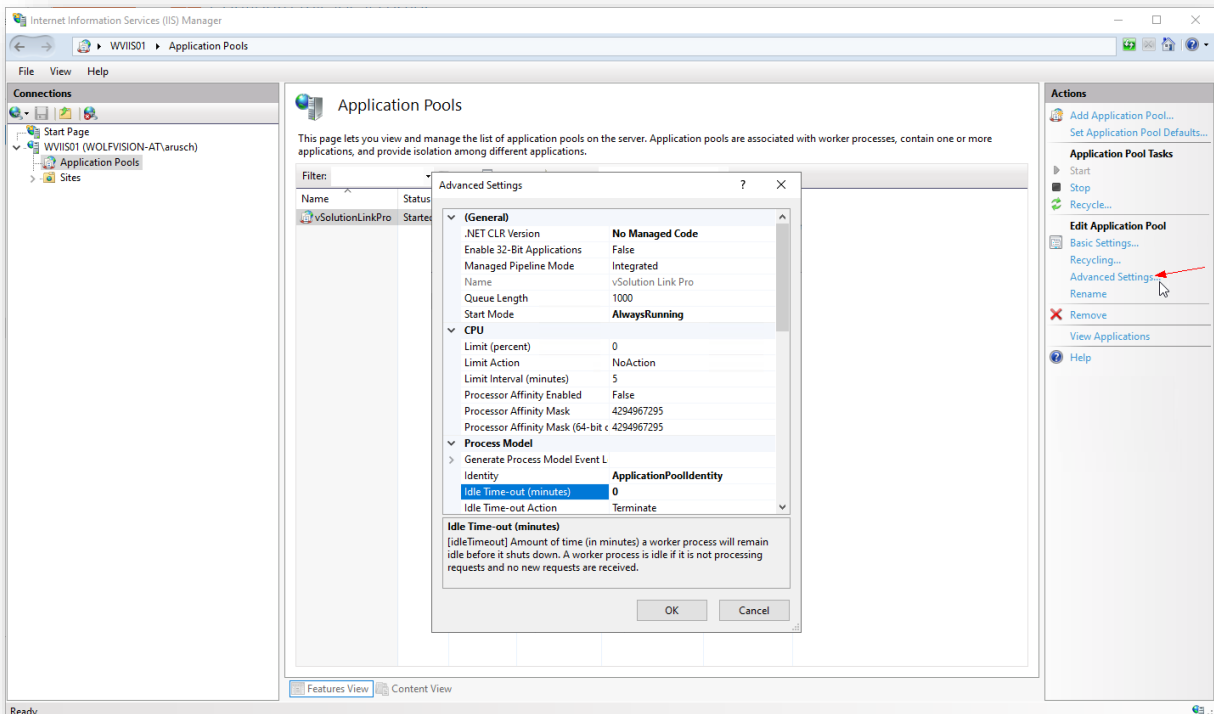
Set Enable 32-Bit Applications to "False"



Change Start Mode in Advanced settings to "AlwaysRunning" to allow 24/7 operation



Change Idle Time-out (minutes) in Advanced settings to "0"



Please note

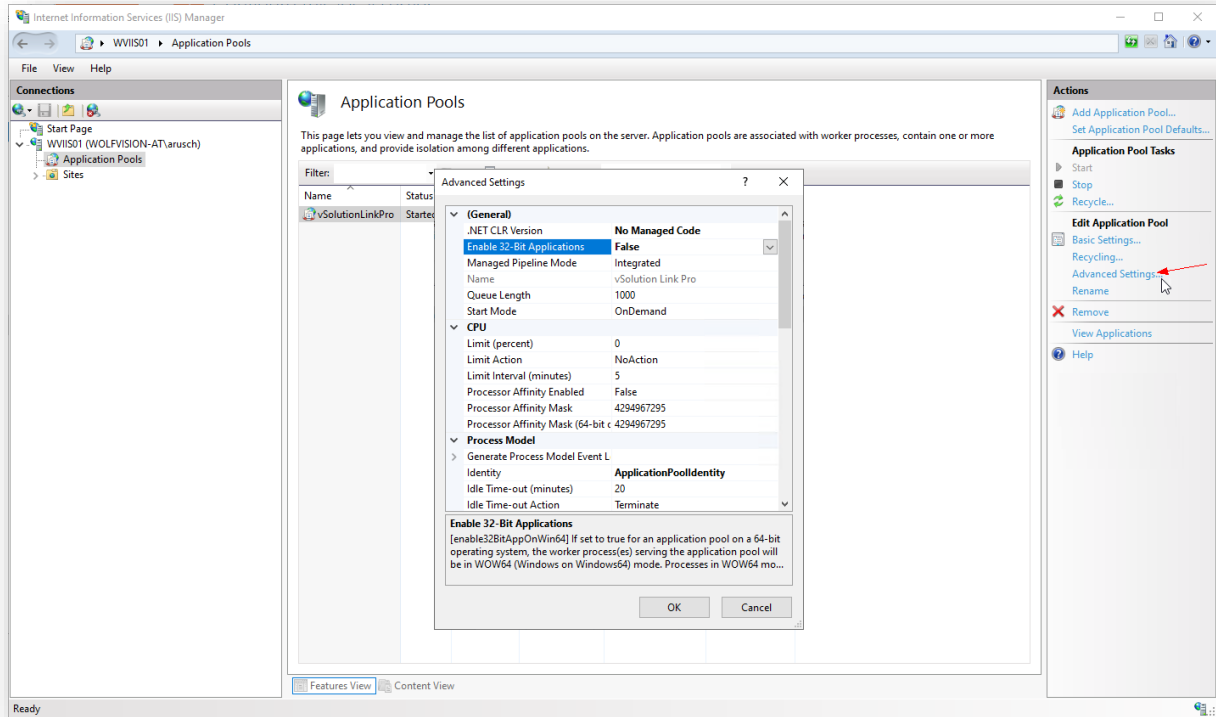
When the IIS is running OnDemand, it stops when:

- No vSolution Link Pro window is opened in a browser window at any client
- No Management Hub connection is opened
- No device uses calling home.

Check the settings files web.config and appsettings.json

Verify web.config (will be found in the root folder of the IIS), hostingmodel has to

Set Enable 32-Bit Applications to "False"



Verify web.config (will be found in the root folder of the IIS), hostingmodel has to be set to "inprocess".



```
web.config - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <location path="." inheritInChildApplications="false">
    <system.webServer>
      <handlers>
        <add name="aspNetCore" path="*" verb="*" modules="AspNetCoreModuleV2" resourceType="Unspecified" />
      </handlers>
      <aspNetCore processPath=".\\WolfVision.MgmtTool.Api.exe" stdoutLogEnabled="false" stdoutLogFile=".\logs\\stdout" hostingModel="inprocess">
        <environmentVariables>
          <environmentVariable name="ASPNETCORE_ENVIRONMENT" value="Production" />
        </environmentVariables>
      </aspNetCore>
      <security>
        <requestFiltering allowDoubleEscaping="True">
          <requestLimits maxAllowedContentLength="2147483648" />
        </requestFiltering>
      </security>
    </system.webServer>
  </location>
</configuration>
<!--ProjectGuid: B7ECE9CB-D3F1-47F9-94D0-68D4F46E08F0-->
```

The setting "InProcessHostingModel" in the file appsettings.json is obsolete since vSolution Link Pro v1.9 and later.

This setting is ignored and has no effect anymore.



```
appsettings.json - Notepad
File Edit Format View Help
{
  "Hosting": {
    "AppName": "vSolution Link Pro",
    "Port": 80,
    "HttpsPort": 443,
    "UseHttps": true,
    "CertificatePath": "C:\\ProgramData\\WolfVision\\vSolution Link Pro\\certificate.pfx",
    "InProcessHostingModel": true,
    "CertificateKey": "Dvx_pGpc4z2e_F4m_Dp@",
    "EnableSwagger": false,
    "Enable2FA": false,
    "MaxRequestBodySize": null
  },
  "MailServer": {
    "ProviderType": 0,
    "MailServer": "",
    "MailPort": 587,
    "Sender": "",
    "Username": "",
    "Password": "P@ssw0rd",
    "UseAuthentication": false,
    "ConnectionSecurity": 1,
  }
}
```


9. Move from Desktop Installation to IIS Installation

To move all data from a former desktop installation to a server installation, ensure that vSolution Link Pro is properly installed on the IIS server.

9.1. Important

A fresh installation of vSolution Link Pro on the server with identical version number than the former desktop installation is strongly recommended.

By continuing with the following steps, all the data of the vSolution Link Pro installation on the server get lost.

1. Stop the vSolution Link Pro server at the IIS Manager.
2. Delete all files and subfolders of the `Data` folder on your IIS installation.
3. Default path:
`C:\inetpub\wwwroot\vSolutionLinkPro\`
4. Copy the entire contents of the `Data` folder from your desktop installation.
Default path:
Windows desktop installation (hidden folder) `C:\ProgramData\WolfVision\vSolution Link Pro\`
MacOS desktop installation `/Library/Application Support/WolfVision/vSolution Link Pro/`
5. Paste the files into the `Data` folder of your IIS installation.
6. Default path:
`C:\inetpub\wwwroot\vSolutionLinkPro\`
7. Check the permission, renew if necessary (see section 5.5 of this document)

9.2. Important

Check all listed paths in the appsettings.json file and correct it accordingly.

Default path on IIS: `C:\\inetpub\\wwwroot\\vSolutionLinkPro\\Data\\`

Start the vSolution Link Pro at the IIS Manager.

All settings and data of the former Desktop installation are transferred to the server, including login credentials.

10. Index

Version	Date	Changes
1.9.3	2024-11-27	Update to vSolution Link Pro version 1.9.3
1.9.1	2024-10-29	Chapter 9: added "check permission"
1.9.1	2024-05-02	DHCP Option added
1.9.1	2023-10-27	Update to vSolution Link Pro version 1.9.1 Added section "Move from Desktop Installation to IIS Installation".
1.9.0	2023-07-25	Update to vSolution Link Pro version 1.9.0 Added rules for updating the application.
The version numbering has been adapted to the versioning of the application.		
1.5	2023-05-17	Added Management Hub activation (Cloud)
1.4	2023-04-25	Update to vSolution Link Pro version 1.8.0
1.3	2022-06-21	.NET Core Update to version 5.0.17
1.2	2022-05-23	Added WebDAV note
1.1	2021-07-07	Updated Firewall rules
1.0	2021-03-09	Created