4D NAV

NavView User Guide – 01 Introduction

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4D Nav, LLC

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01	A	Initial release	SW	GAW	GAW	May 14, 2024

Table of Contents

1.   Introduction

This section provides an overview of the basics for the NavView software from typical installation to navigating the program.

NavView is a comprehensive positioning and navigation software package for offshore construction. The base package can be augmented by modules to extend its application to specialized operations from rig moves complete with anchor handling tug support to real time anchor catenary modelling.

NavView can operate as a standalone system with a single NavView running on a vessel providing positioning and navigation for that vessel and if present, its other vehicles such as ROVs and subsea assets.

Alternatively, it can be operated as part of a network where multiple NavView clients run as standalone positioning and navigation and/or remote monitoring systems. Communications between these are handled by NavView Network Services via LAN, WAN and the Internet. Each NavView client updates the data under its control, e.g., vehicle configuration and positions, and receives data provided by other clients for display and monitoring. Configurations are stored in a database and accessed by connected clients. Transient real-time data such as vehicle positions are published to connected subscribers.

NavView can be installed with Roles and Privileges enabled. This provides the level of operator interface depending on role assigned. Roles options are as follows:

Username	Password
Not Logged In	N/A
User	user
Online	online
Supervisor	supervisor
Admin (Administrator)	admin

1.1   Software

NavView runs on IBM PC compatible computers and is supported for the following operating systems:

- Windows 10 Professional 64 bit
- Windows 11 Professional 64 bit

The NavView installation includes and installs the following required supporting software:

- Microsoft .NET Framework 4.8
- Microsoft C++ Redistributables 2022
- AutoDesk RealDWG 2024
  - Supports access to DWG files for display of graphic backgrounds, vehicle outlines, etc.
- Microsoft SQL Server Compact Edition

- Supports EPSG geodetic database (see Geodesy Section for details)
  - Microsoft SQL Server Express LocalDB
    - Supports digital terrain model
    - Supports the data logging
  - MFormats
    - Supports video input and manipulation features

The following software is optional and not included in the installation:

- MongoDB
  - Supports NavView network services (configurations, files, etc.)
  - Required if NavView remote clients are to be used on a network
- Redis
  - Supports NavView network services (transient real-time data)
  - Required if NavView remote clients are to be used on a network
- Microsoft SQL Server Management Studio (SSMS) (Recommended)
  - Supports management of both SQL Server Express and localdb databases
- SQL Server Maintenance Solution
  - Supports NavView Database Services database Backup and Detach features.
  - Requires installation of SSMS
- Microsoft SQL Server Express
  - Required for sharing of a single SQL Server instance by multiple distributed NavView clients
  - Required for Remote NavView database operations
  - Requires installation of SSMS
- Microsoft Edge WebView2
  - Required to use Web View in NavView
  - Comes pre-installed with Windows 11

1.1.1   NavView Installation Package

The NavView installation folder consists of an installer and supporting 3rd party software. The folder structure and contents of the installation package are shown below. The NavView version is given in the application and installer file names. In this example, the version is NavView_3.6.0+2135.
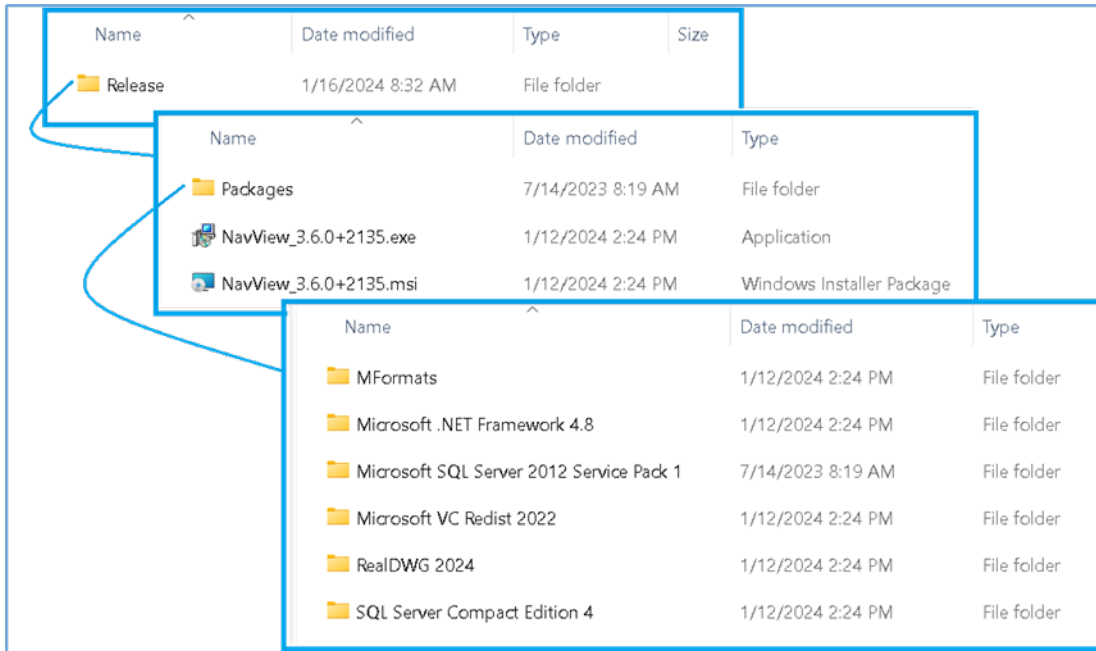
1.1.2   NavView - First Time Installation and Major Upgrades

When installing NavView for the first time on a PC or applying a major upgrade, it is critical the following steps are followed.

Note: Going from Nav View v3.4 to v3.5 is considered a major upgrade. Going from 3.6.0+25 to 3.6.0+26 or 3.6.0 to 3.6.1 is considered a minor upgrade.

Note: When installing NavView, if presented with a message stating that Windows protected your PC (see below), click on **More Info** and select **Run Anyway**. This is likely due to attempting to run from within a compressed file.

1.   Launch File Explorer.

2.   Copy the Release folder to the computer NavView is to be installed on, making sure the Packages folder, the NavView_x.x.x+yyy.exe, and the NavView_x.x.x+yyy.msi are in the same folder on the PC

3. Double click on the Application, in this example NavView_3.5.0+1263.exe to launch the installer.

4. The first page of the install wizard presents the **Terms and Conditions** under which the supporting software can be installed and used.
   a. To continue with the installation
      i. Check the I agree to the license terms and conditions box
      ii. Click Install
      iii. When asked by Windows if you wish to allow the software to be installed click **Ok**; or
   b. To exit the installation, click **Close.**
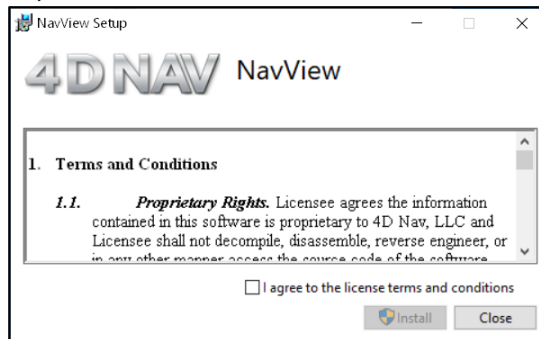
   c. The installer will then install the 3rd party software included in the Packages folder displaying a progress bar as it proceeds, accept any defaults if presented with options.

Note: The NavView installer will not overwrite newer versions of any of the 3rd party software if found on the computer.

5. The second page of the install wizard presents the **End-User License Agreement** under which the NavView software can be installed and used.
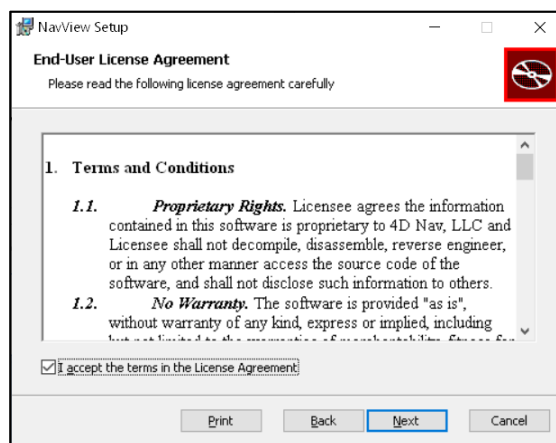

   a. To continue with the installation.
      i. Check the I accept the terms in the License Agreement box.
      ii. Click Next; or
   b. To exit the installation, click **Cancel**

6. On the third page of the wizard (License Settings), if you are not installing NavView on a network and using the KEYLOK network dongle, click **Next** and go to step 7, otherwise
   a. Check the Use KEYLOK network server box

b. Enter the IP address of the computer on the network that the dongle is plugged into
c. Leave the default Port at 4242
d. Click Next
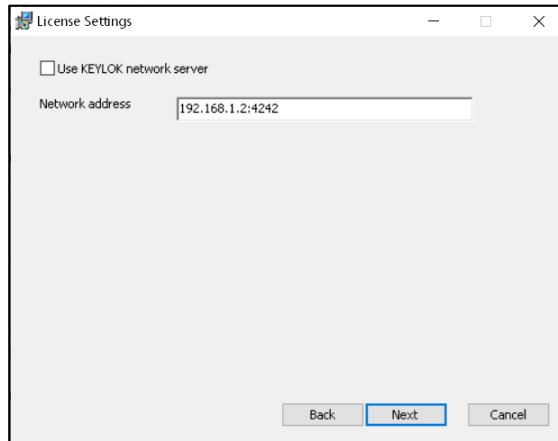
7. At the **Ready to install NavView** page, click **Install** to launch the *msi* to install NavView, **Back** to return to check your previous wizard settings or **Cancel** to exit the installation.
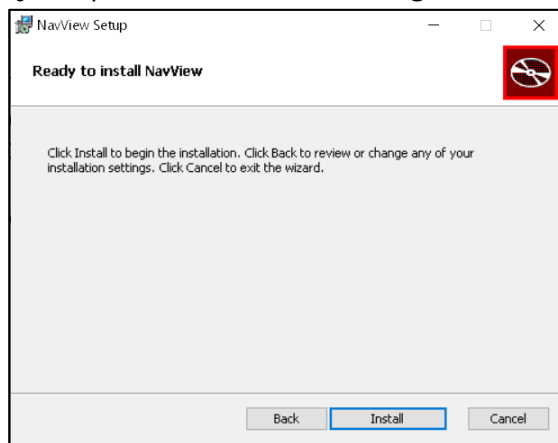
8. Once the NavView installation has completed, you can either launch NavView upon closing the wizard by checking the **Launch NavView** box and then clicking **Finish**, or just click **Finish** to exit the installer.
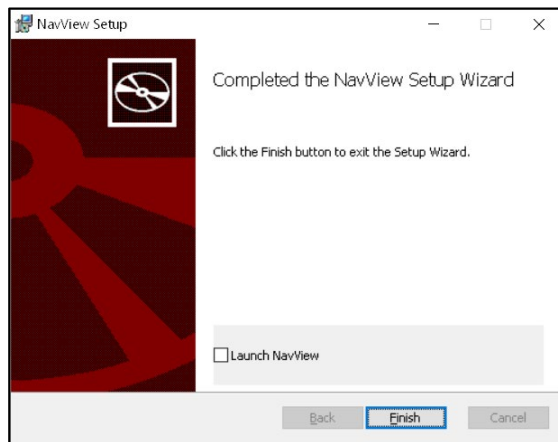
9. Once the installation has completed, just click **Close** on the last page of the wizard.
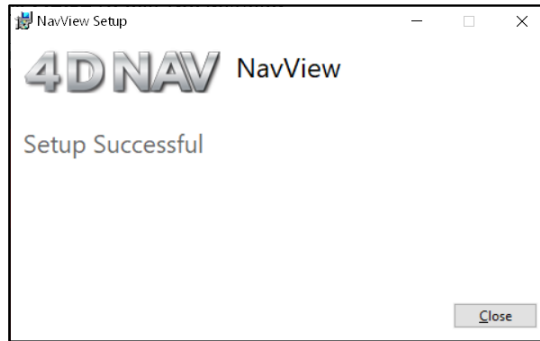
10. If at any time during the installation, you are presented with a page that reports the failure of the installation.
    a. Click on the hypertext link in the page to open the installation log file.
    b. Save this log file and send it to 4D Nav at support@4dnav.com

1.1.3 NavView - Minor Upgrades

When applying a minor update to NavView the following steps are to be followed.

Note: Going from Nav View v3.4 to v3.5 is considered a major upgrade. Going from 3.6.0+25 to 2.6.0+26 or 3.6.0 to 3.6.1 is considered a minor upgrade.

Note: When installing NavView, if presented with a message stating that Windows protected your PC (see below), click on **More Info** and select **Run Anyway**. This is likely due to attempting to run from within a compressed file.
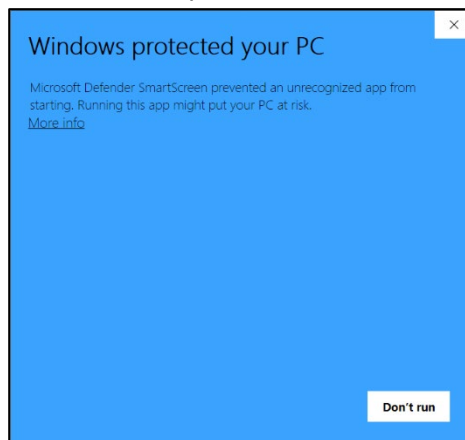

1. Launch File Explorer.

2. Copy the Release folder to the computer NavView is to be installed on, making sure the Packages folder, the NavView_x.x.x+yyy.exe, and the NavView_x.x.x+yyy.msi are in the same folder on the PC

3. Double click on the Microsoft Software Installer (msi), in this example NavView_3.5.0+1263.msi to launch the installer.

4. The first page of the install wizard presents the **End-User License Agreement** under which the NavView software can be installed and used.
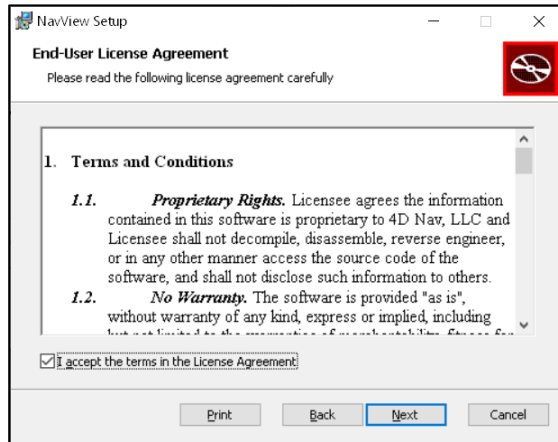
a. To continue with the installation.
   i. Check the I accept the terms in the License Agreement box.
   ii. Click **Next**; or
b. To exit the installation, click **Cancel**

5. On the third page of the wizard (License Settings), if you are not installing NavView on a network and using the KEYLOK network dongle, click **Next** and go to step 7, otherwise
   a. Check the Use KEYLOK network server box
   b. Enter the IP address of the computer on the network that the dongle is plugged into
   c. Leave the default Port at 4242
   d. Click **Next**
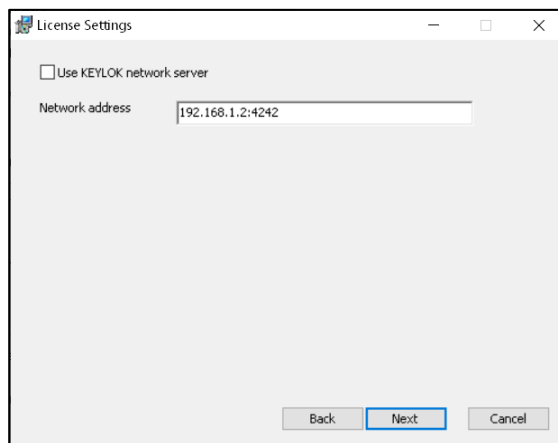
6. At the **Ready to install NavView** page, click **Install** to launch the *msi* to install NavView, **Back** to return to check your previous wizard settings or **Cancel** to exit the installation.
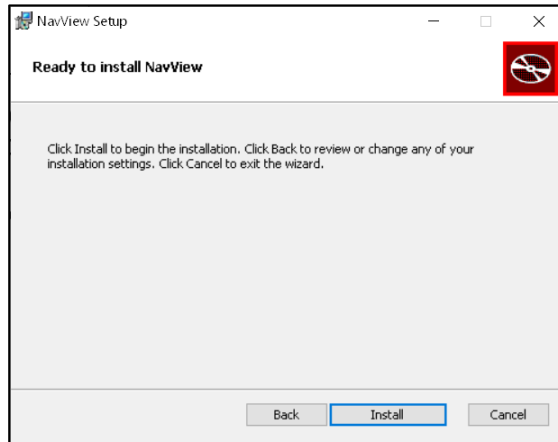
7. Once the NavView installation has completed, you can either launch NavView upon closing the wizard by checking the **Launch NavView** box and then clicking **Finish**, or just click **Finish** to exit the installer.
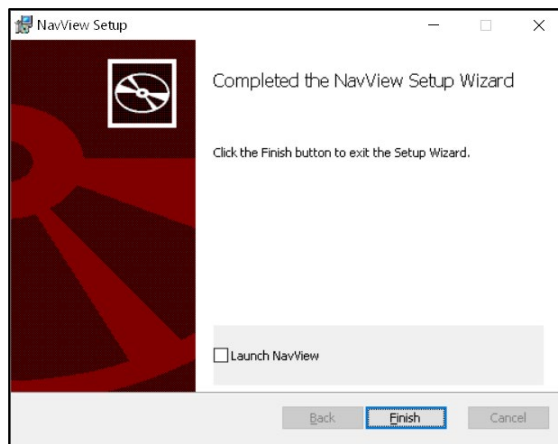
8. Once the installation has completed, just click **Close** on the last page of the wizard.
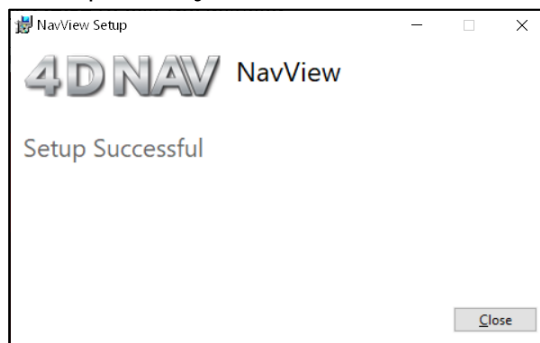
9. If at any time during the installation, you are presented with a page that reports the failure of the installation.
    a. Click on the hypertext link in the page to open the installation log file.
    b. Save this log file and send it to 4D Nav at support@4dnav.com

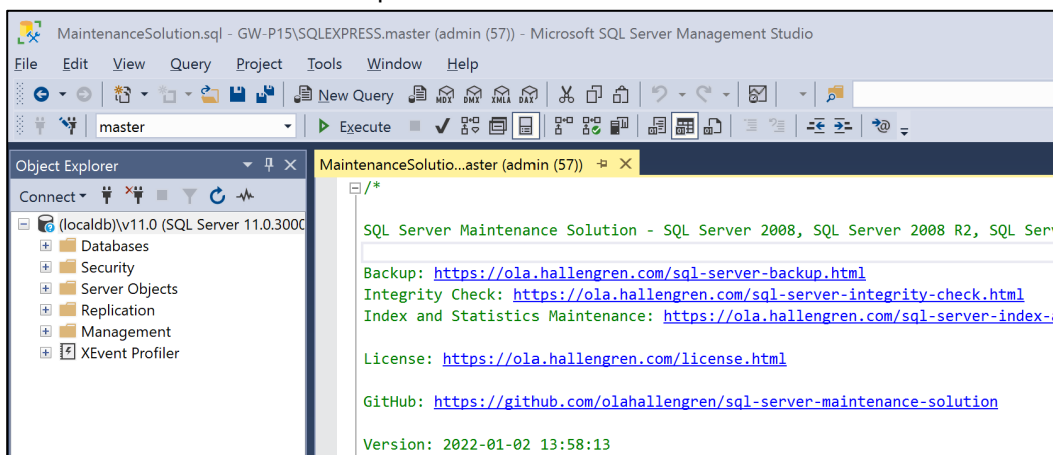### 1.1.4   Optional Software - SQL Server Management Studio

The installation file(s) for SQL Server Management Studio can be downloaded directly from the Microsoft website. Installation is straightforward, simply execute the installation executable and accept the default options.

Note: It is recommended that SQL Server Management Studio only be installed on the computer being used as the *server* for the NavView network, i.e. where the instance of either localdb or SQL Express that is being used is located.
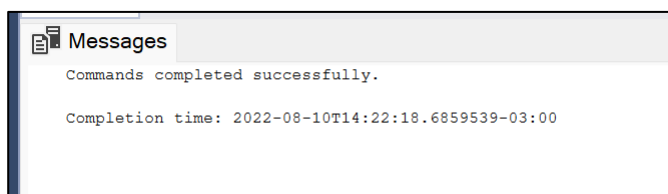
1.1.5   Optional Software - SQL Server Maintenance Solution

The **MaintenanceSolution.sql** script must run against SSMS to use the NavView database backup and detach features (see Database Services section). This file can be downloaded from SQL Server Backup (hallengren.com) or obtained from 4D Nav.

1. Launch SSMS and connect to the (localdb)\v11.0 using Windows authentication.

2. Select the top level in the Object Explorer view.

3. Drag the MaintenanceSolution.sql file into SSMS.

4. Click the **Execute** button.

5. Upon successful execution, the following message will appear in the Messages panel as shown below.

6. Disconnect from (localdb)\v11.0

7. If using SQLEXPRESS, connect to the SQL server SQLEXPRESS using SQL Server authentication.

8. Repeat steps 2 to 4

9. Disconnect from SQLEXPRESS

10. Exit SSMS

## 1.1.6 Optional Software - SQL Server Express

If SQL Server Express is required, it and SQL Server Management Studio (see section 1.1.4) must both be installed. These can be downloaded directly from the Microsoft website. In addition, to use the NavView database backup and detach features, application of SQL Server Maintenance Solution is required (see section 1.1.5).

Note: SQL Express is only to be installed on the computer being used as the *server* for the NavView network.

1.1.6.1 Installing SQL Server Express

The following steps detail the installation of SQL Server Express.

1. Launch SQLEXPR_x64_ENU.exe and accept the default location to unpack the installer or select a new location and click OK.

2. When the SQL Server Installation Center dialog opens, click on New SQL Server standalone installation or add features to an existing installation
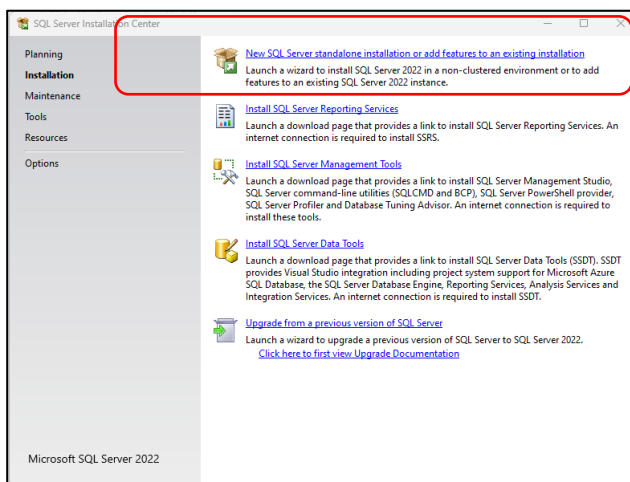

3. Terms and Conditions: Accept the Terms and Conditions and click Next

4. Install Rules: The installer runs the Install Rules to confirm SQL Server can be installed on the PC
    a. If any of these fail, the respective reason for failing must be investigated and corrected.
    b. The Firewall warning indicates that Firewall rules will need to be added in order to allow access from other PCs (see 1.1.6.2)
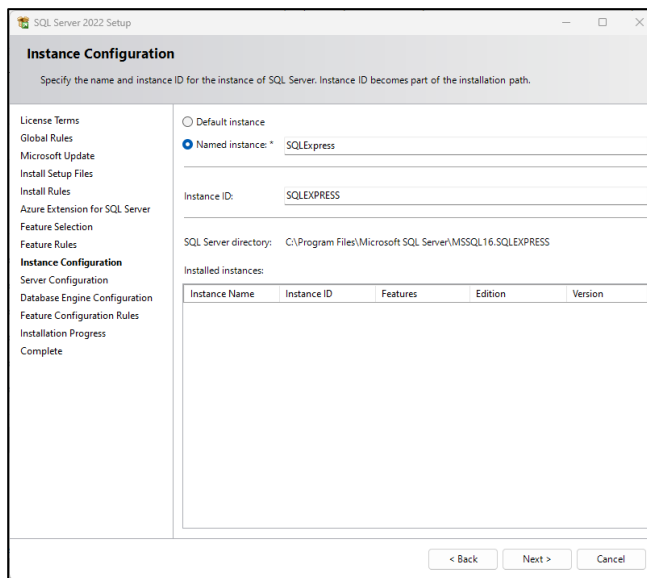   c. Click Next
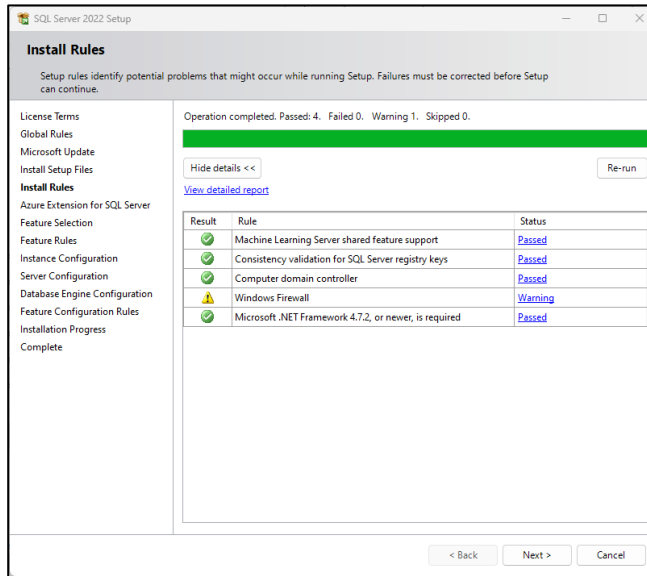
5. Azure Extension for SQL Server: Uncheck Azure Extension for SQL Server and click Next
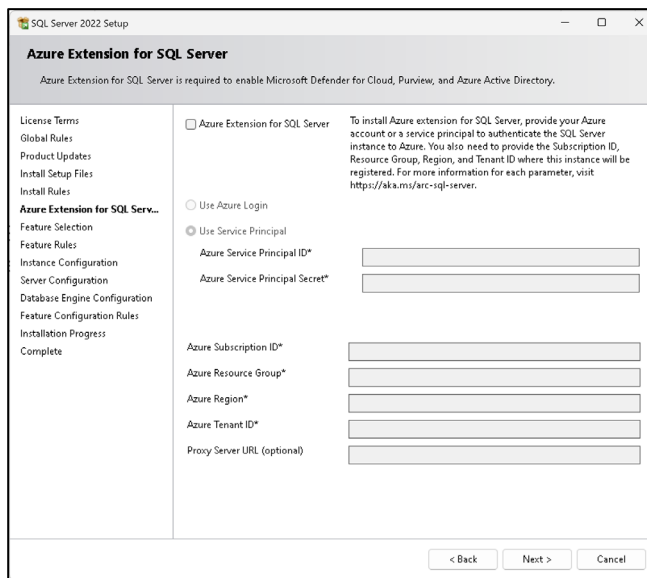
6. Feature Selection: Only **Database Engine Services** is required
   a. Click Unselect All
   b. Check the Database Engine Services box
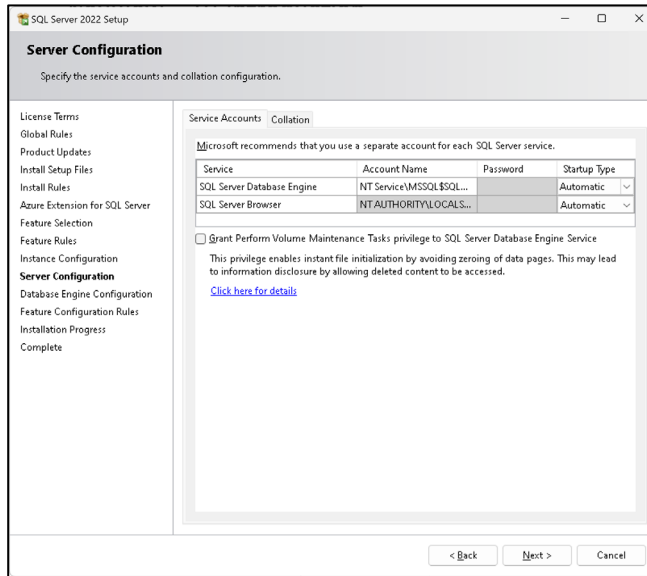   c. Click Next
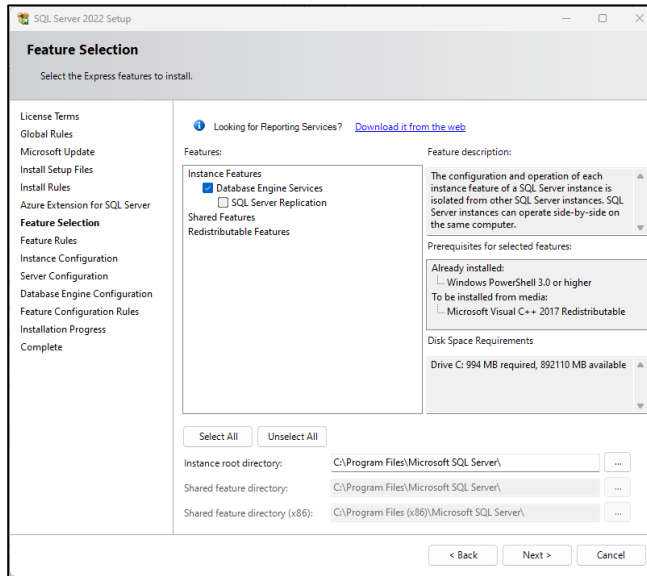
7. Instance Configuration: Recommend using defaults, click Next
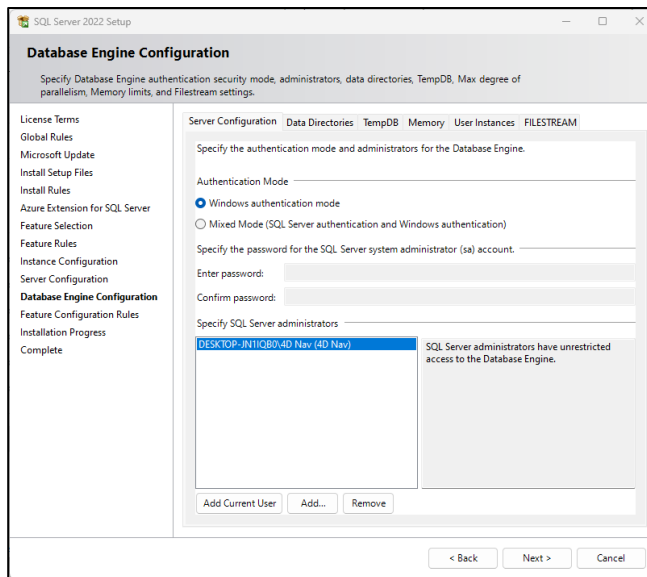

8. Server Configuration:
   a. SQL Server Database Engine: Default Startup Type is Automatic, leave at default
   b. SQL Server Browser: Default Startup Type is **NOT** Automatic, change it to Automatic
   c. Click Next

9. Database Engine Configuration:
   a. Server Configuration tab: Leave at default Windows Authentication (this will be edited later)
   b. Data Directories tab: Default for all folders is C:\Program Files\Microsoft SQL Server and folders in this folder, these can be changed to direct database files to be logged to a different folder but unless familiar with SQL Server it is recommended to leave default settings
   c. Click Next to launch the installation

10. Upon completion (or failure) the user is presented with a summary of the installation.

11. Close the SQL Server Installation Center dialog

1.1.6.2 Configuring SQL Server Express and SSMS

The following details the configuration of SQL Server and SSMS regardless of the source of the installation.

1. Create the SQL Express *admin* user.
   a. Launch SQL Server Management Studio
      i. Click on the Windows Start icon and type SSMS
      ii. Click on SQL Server Management Studio when it is listed
   b. Initial connection to SQL Server
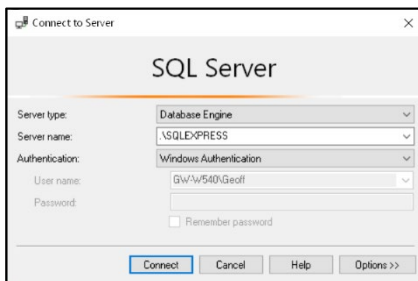
      i. Server Type: Should default to those just installed, if not select Database Engine
      ii. Server name: Should default to those just installed, if not select/enter [PC name]\SQLEXPRESS

Note: It may be necessary to enter the IP address instead of the PC name.

      iii. Authentication: Leave at default Windows Authentication
      iv. Click Connect
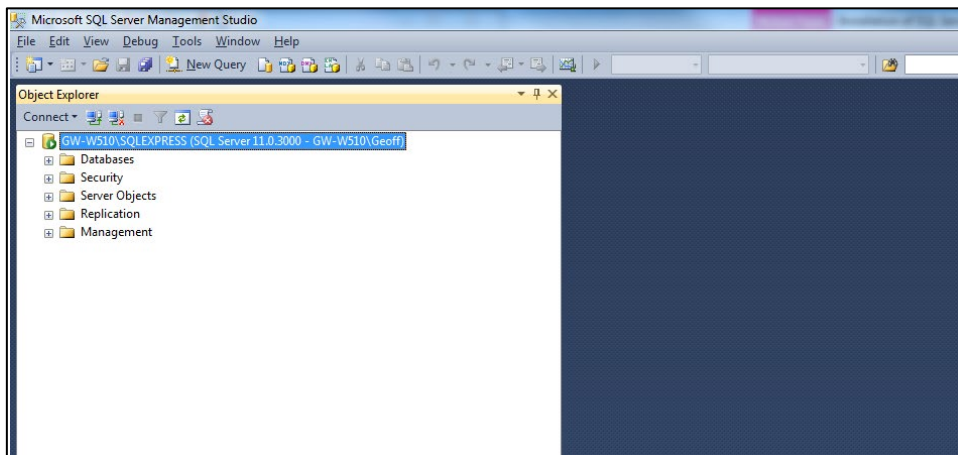
   c. In the Object Explorer, right mouse click on the server (top of tree) and select Properties
      i. In Select a page, select Security
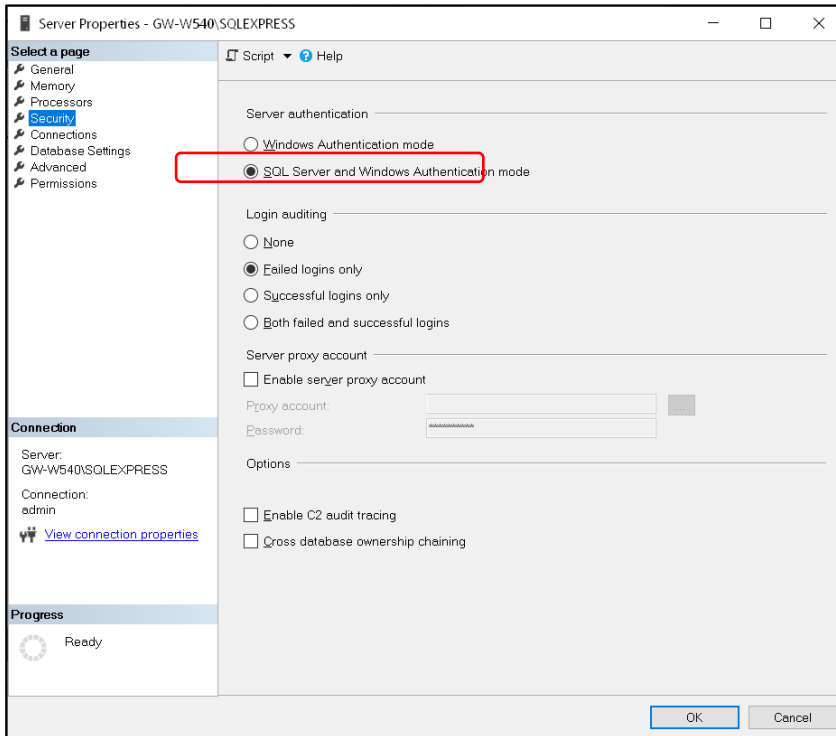
A. In Server Authentication, select SQL Server and Windows Authentication mode

ii. In Select a page, select Connections
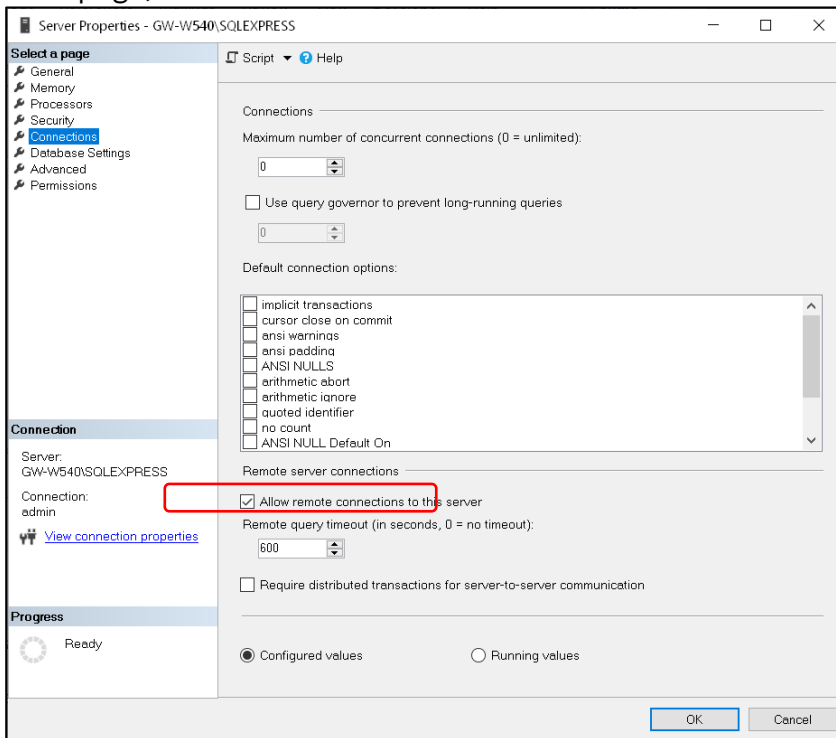
A. Confirm Allow remote connections to the server is checked.

iii. Click OK

d. In the Object Explorer, right mouse click on Security, select New then Login...
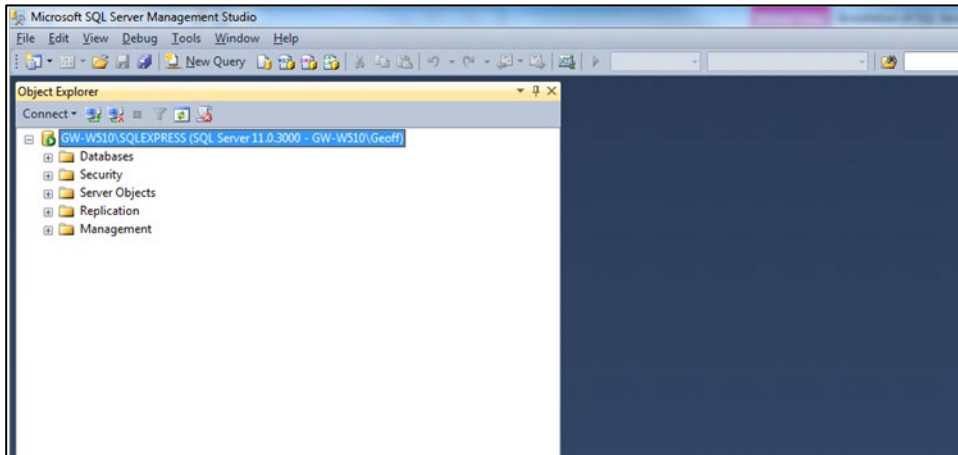
    i.   In Select page, select General (default)
        A.   Login name: Enter *admin*
        B.   Select SQL Server authentication
        C.   Password *admin*
        D.   Confirm password: *admin*
        E.   Enforce password policy: Uncheck
   ii.   In Select page, select Server Roles
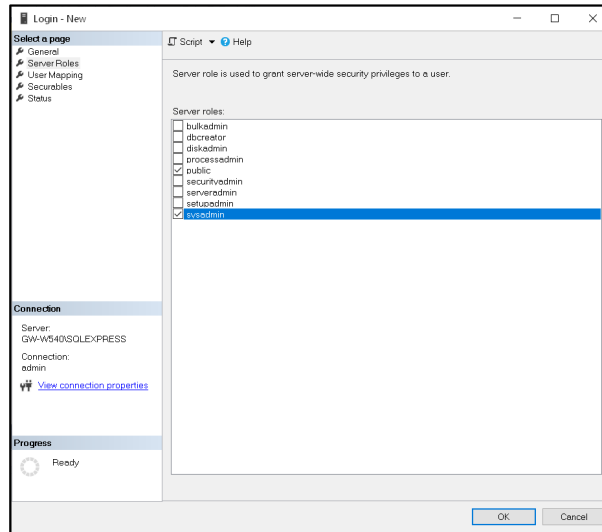
      A.   Public: Confirm this is checked

      B.   Sysadmin: Check

   iii. Click **OK**

  e. Exit SQL Server Management Studio

2. Confirm settings.
  a. Reboot PC
  b. Launch SQL Server Management Studio

  c. Server Type: Should default to those just installed, if not select Database Engine
  d. Server name: Should default to those just installed, if not select/enter [PC name]\SQLEXPRESS
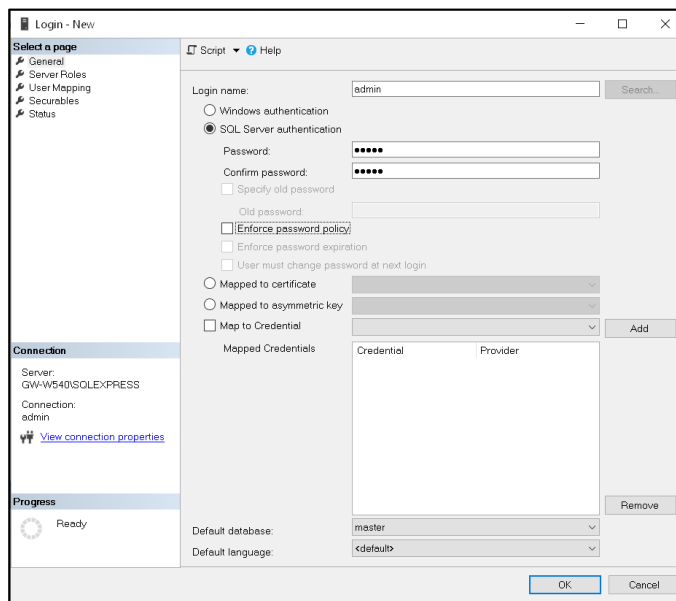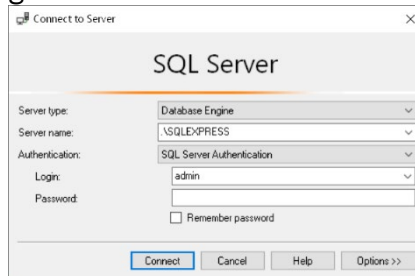 e. Authentication: Select SQL Server Authentication
  f. Login: admin
  g. Password: admin
  h. Click Connect
  i. Confirm SQL Server Management Studio connects to the SQL Server database instance

3. Configure SQL Express for remote access
  a. Configure SQL Server to listen on a static port
    i. Click on the Windows icon and type in Computer Management and run as an Administrator
    ii. Expand Services and Applications > SQL Server Configuration Manager > SQL Server Network Configuration and select Protocols for SQLEXPRESS
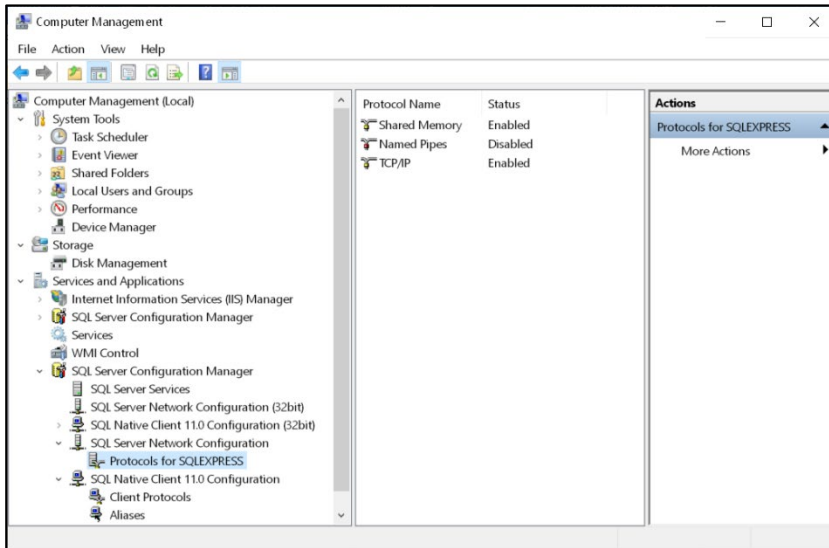
iii. Double click on TCP/IP to open the TCP/IP Properties dialog.
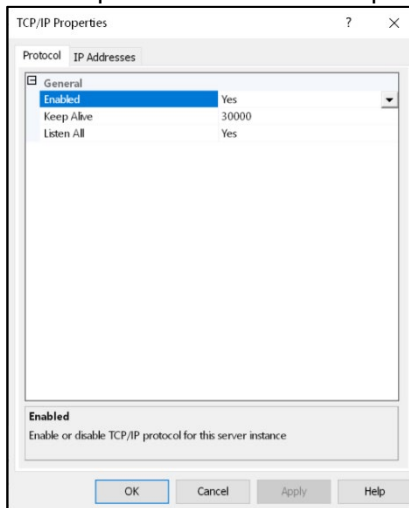
A. In the Protocol tab

I. Enabled: From the drop-down list to select Yes

B. In the IP Address tab, scroll to the bottom to IPAll

        I.   TCP Dynamic Ports: Clear this entry, make sure it is blank.

        II.   TCP Port: 1433

    C.   Click OK

  b.   Restart the service.

    i.   Expand Services and Applications > SQL Server Configuration Manager and select SQL Server Services.
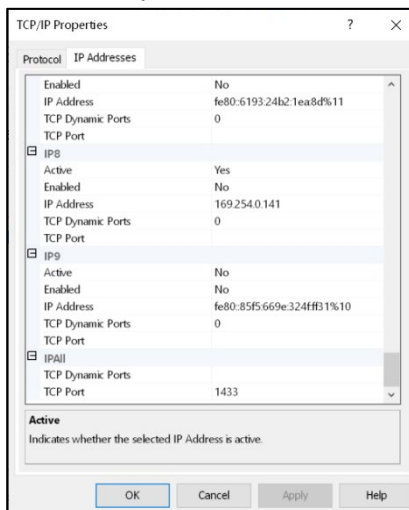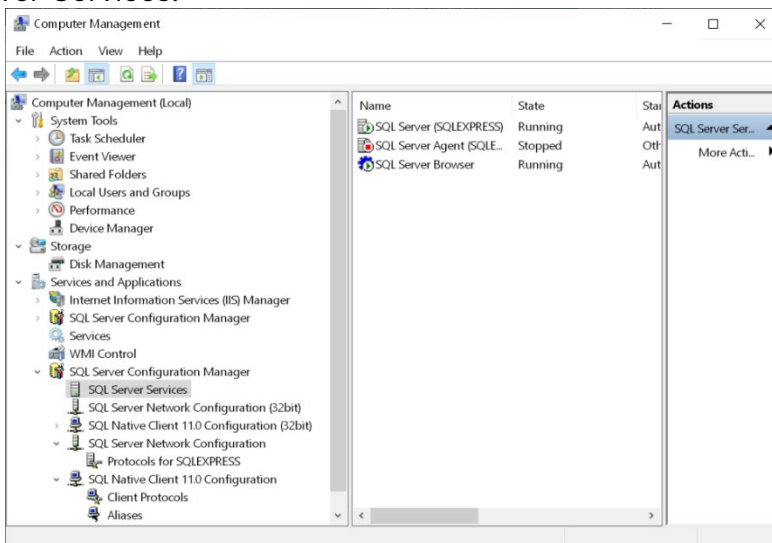

    A.   Right mouse click on SQL Server (SQLEXPRESS) and click Restart

    B.   Right mouse click on SQL Server Browser and click Restart

4. Configure Windows Firewall

  a.   Access the Windows Defender Firewall with Advanced Security application.

    i.   Click on the Windows icon

    ii.   Type in Windows Firewall and run the Windows Defender Firewall with Advanced Security application as an Administrator.

    iii. Click on Inbound Rules.
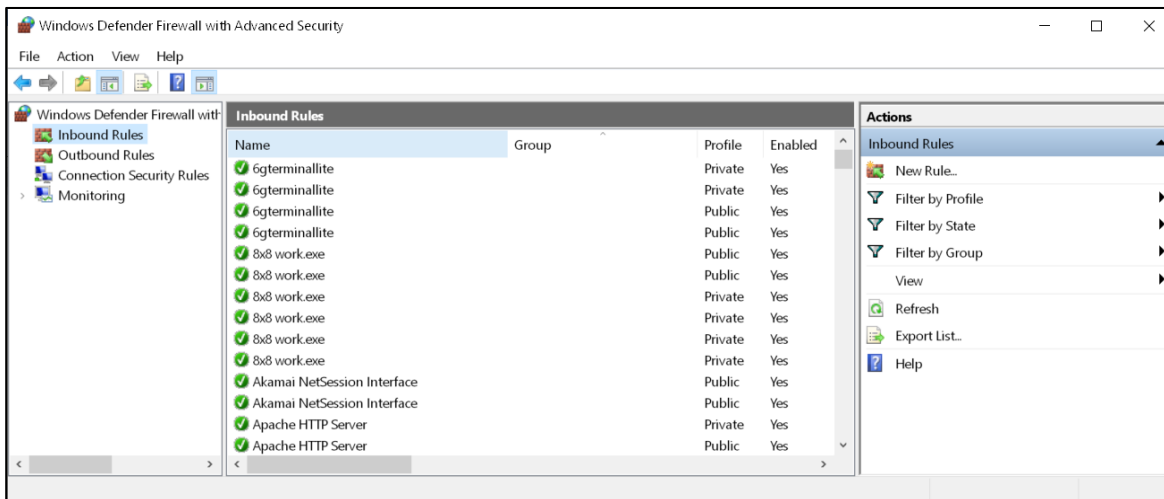
  b.   Add a Port exception for TCP Port 1433

    i.   Click on New Rule to launch the New Inbound Rule Wizard

    ii.   Rule Type Step: Select Port and click Next

    iii. Protocol and Ports Step: Select TCP and enter 1433 for Specific Local Ports, click Next

    iv.   Action Step: Select Allow the connection, click Next

    v.   Profile Step: Check all 3 boxes (Domain, Private and Public), click Next

    vi.   Name Step: Enter a suitable name, e.g., "SQL - TCP Port 1433", click Finish

  c. Add a port exception for UDP Port 1434

    i.   Click on New Rule to launch the New Inbound Rule Wizard

    ii.   Rule Type Step: Select Port and click Next

    iii.   Protocol and Ports Step: Select UDP and enter 1434 for Specific Local Ports, click Next

    iv.   Action Step: Select Allow the connection, click Next

    v.   Profile Step: Check all 3 boxes (Domain, Private and Public), click Next

    vi.   Name Step: Enter a suitable name, e.g., "SQL - UDP Port 1434", click Finish

  d. Add a Program exception for sqlserver.exe

    i.   Click on New Rule to launch the New Inbound Rule Wizard

    ii.   Rule Type Step: Select program and click Next

    iii.   Program Step: Select This program path and click Browse

    iv.   Navigate to C:\Program Files\Microsoft SQL Server\MSSQLXX.SQLEXPRESS\MSSQL\Binn and select sqlserver.exe

Note: The highlighted XX in the SQL Server path represents the version and will vary between installations.

    v.   Click Next

    vi.   Action Step: Select Allow the connection, click Next

    vii.   Profile Step: Check all 3 boxes (Domain, Private and Public), click Next

    viii.   Name Step: Enter a suitable name, e.g., "SQL - sqlserver", click Finish

  e. Add a Program exception for sqlbrowser.exe

    i.   Click on New Rule to launch the New Inbound Rule Wizard

    ii.   Rule Type Step: Select program and click Next

    iii.   Program Step: Select This program path and click Browse

    iv.   Navigate to C:\Program Files (x86)\Microsoft SQL Server\90\Shared and select sqlbrowser.exe

    v.   Click Next

    vi.   Action Step: Select Allow the connection, click Next

    vii.   Profile Step: Check all 3 boxes (Domain, Private and Public), click Next

    viii.   Name Step: Enter a suitable name, e.g., "SQL - sqlbrowser", click Finish

      a. Confirm you have the following Inbound Rules added as shown below

Inbound Rules

Name	Group	Profile	Enabled	Action	Override	Program	Local Address	Remote Address	Protocol	Local Port
✅ SQL - sqlservr.exe		All	Yes	Allow	No	%Progra…	Any	Any	Any	Any
✅ SQL-sqlbrowser.exe		All	Yes	Allow	No	%Progra…	Any	Any	Any	Any
✅ SQL-TCP 1433		All	Yes	Allow	No	Any	Any	Any	TCP	1433
✅ SQL-UDP 1434		All	Yes	Allow	No	Any	Any	Any	UDP	1434

  f. Close the Windows Defender Firewall with Advanced Security application

1.1.7   Optional Software - MongoDB and Redis

MongoDB and Redis are two separate software packages. When installed, they create services that are automatically started when Windows launches. It is recommended that you contact 4D Nav for an installation package.

Note: MongoDB and Redis are only to be installed on the computer being used as the *server* for the NavView network.

Note: Specific versions of MongoDB and Redis are required. These are as follows:

- Mongo v4.0.10 2008R2Plus SSL
- Redis v3.2.100

1.1.7.1   Installing MongoDB and Redis Using 4D Nav Installer

4D Nav provides the MongoDB and Redis installation as a zip file called Mongo_and_Redis.zip. The following details the steps required to install and run these services.

1. Unzip the contents of the Mongo_and_Redis.zip file to the PC the services are to be installed on.

2. From File Explorer, navigate to the Mongo_and_Redis > MongoDBAndRedis_AutoInstallation folder.

3. Right mouse click on **setupconfigs_rev_2.bat** and select the option to **Run as Administrator** to open a Command console window and step through the following:

Note: It is critical that the bat be run as an Administrator. If this is not done the respective services configuration updates will not be applied nor will the MongoDB Inbound Firewall rule be added.

a. Runs **mongodb-win32-x86_64-2008plus-ssl-4.0.10-signed.msi** which Installs MongoDB as a Windows service and starts it
b. Stops the MongoDB service
c. Updates the MongoDB service configuration with the mongod.cfg file included in this installation package
d. Restarts the MongoDB service
e. Adds an Inbound Firewall rule for MongoDB service
f. Runs **Redis-x64-3.2.100.msi** which Installs Redis as a Windows service, adds an Inbound Firewall rule and starts the service
g. Stops the Redis service
h. Updates the Redis service configuration with the redis.windows-service.conf file included in this installation package
i. Restarts the Redis service
j. Exits the installation

1.2   Software Upgrades

1.2.1   NavView

See sections 1.1.2 and 1.1.3.

It is important to note that when updating a system, the update be applied to all computers on a network.

1.2.2   NavView Device Drivers

Updates for existing devices and new devices in addition to being provided as part of a NavView upgrade, can be provided as a patch in the form of a DLL. In this case:

1. Stop NavView if it is running

2. Copy the new device DLL into the *Program Files (x86)\4D Nav\NavView\Devices* folder, replacing the existing DLL in the case of an upgrade

3. Re-launch NavView

1.2.3   RealDWG

RealDWG upgrades are considered a major upgrade to NavView, therefore will be updated when the NavView_x.x.x+YYY.exe is run.

1.2.4   Microsoft Software

This includes the .NET Framework, Microsoft C++ Redistributable, SQL Server Compact, SQL Server LocalDB, and if installed, SQL Server Express. It is recommended that once installed, these be kept up to date using the Windows Update option.

1.3   License Security

NavView is secured with KEYLOK USB dongles or Cloud Controlled Network Floating Licenses. The licensing supports the following security features:

- Standalone and network applications
- Module control
- Reprogrammable in the field

NavView can be run without a license for the following purposes:

- NavView remote client to monitor and view operations
- Setup and test device input
- Project preparation (database setup, vehicle configurations, etc.)
- Extract setting from previous project configurations
- Simulation for training and familiarization
- Database query and exporting

Licenses are programmable to enable the inclusion of specific application modules and are necessary to enable the flow of observation data from devices.

If NavView has detected a license, it will display License Valid in the window title. If a license is not detected, it will display Unlicensed in the title bar.

To display application modules associated with the license, select About from the Home ribbon General section.

Note: An application module set to true is available. If set to false, then the application is not available.
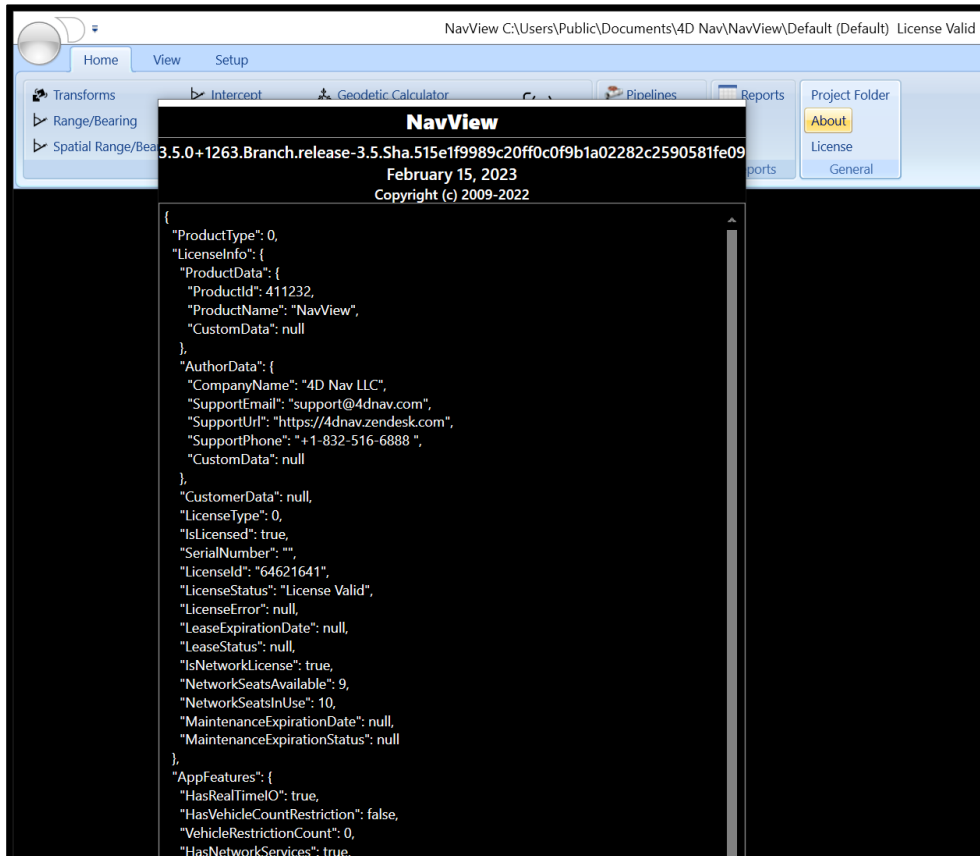
It is important to note that without a license any data received from a device, beyond being decoded and displayed in the respective device status window, is not available for use in anyway. This includes the replaying of raw sensor data.

If Roles and Privileges are enabled in NavView, the user must log in as an administrator to make any changes to the licensing settings.

1.3.1 USB Dongle

To use the KEYLOK USB dongle:

1. Plug the dongle into an available USB port.

2. Launch NavView and log in as Administrator.

3. From the Home ribbon, click on **License** in **General** group.
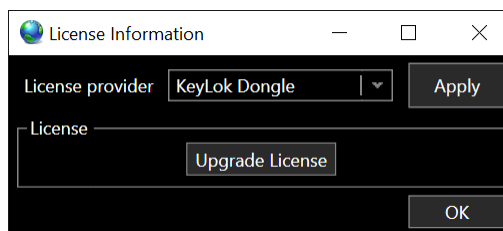
4. Confirm the License provider selected is KeyLok Dongle and if not:

a. Select KeyLok Dongle in the License provider drop-down

5. Click Apply

6. Click OK to close dialog.

1.3.2 Updating a Dongle

If a change to the licensing controlled by a dongle is required, the user will be provided with a unique onetime use update AUTHORIZE.DAT file. To apply this, follow these steps:

1. Ensure the dongle to be updated is plugged into the PC.

2. Copy the AUTHORIZE.DAT file to this PC, location is not critical.

3. Launch NavView and log in as Administrator.

4. From the Home ribbon, click on **License** in **General** group.
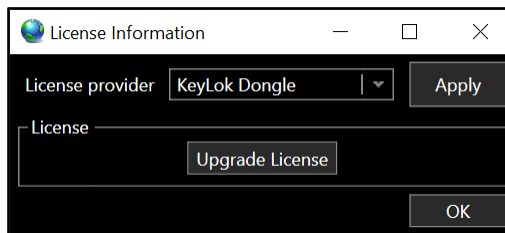

5. Confirm the License provider selected is KeyLok Dongle.

6. Click Upgrade License.

7. When asked if you want to reprogram the dongle, click Yes to continue or No to abort.

8. Navigate to the location the AUTHORIZE.DAT file was copied to and select it and click Open.
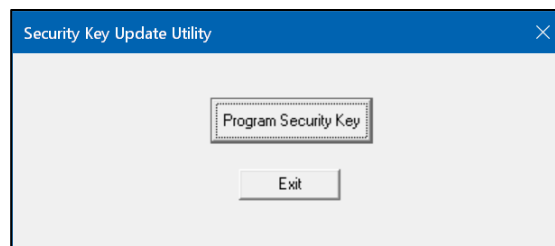
9. From the Security Key Update Utility view, click **Program Security Key** to continue with the reprogramming of the dongle, Exit to abort.

10. A window will pop up showing the serial number of the dongle detected, confirm it is the correct dongle, then click **OK** (note that this view only displays for a short period and if you do not click OK before it closes you will need to start the update process over)

11. If successful, the UPDATE COMPLETE window will appear, click OK to complete the process (this window will also only appear for a short period, if you do not click OK it will close anyway but the reprogramming of the dongle will still have been affected)
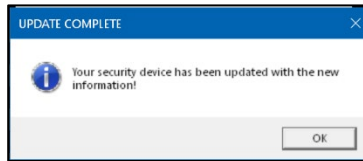
12. If unsuccessful, an ERROR window will display detailing the reason the reprogramming failed, report this to 4D Nav if you cannot resolve the issue
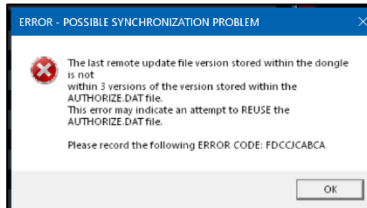
1.3.3   Cloud Controlled Network Floating License

Cloud Controlled Network Floating licenses are activated as **sessions**. A license is activated when a session is opened and de-activated when the session is closed.

Note: Unless a session is checked out, an open session is valid for 2 hours by virtue of the validation cycle. NavView attempts to contact the software license server once an hour to validate the associated license. If this fails, 3 more attempts are made at 20 minute intervals. If these fail, the license is revoked, NavView reverts to an unlicensed state and the license is available.

Note: If NavView is exited without closing the current session it can be relaunched in a licensed state if the session has not expired or been revoked.

Note: Once the session is opened the associated license is not available for others to use until the session is closed, revoked, or expires.

Note: If a session is checked out, NavView does not attempt to contact the software license server and the session expires at the end of the checkout period.

When using the Cloud Controlled Network Floating licenses on a NavView computer that is on the internet and is able maintain good internet connectivity during the use of NavView, Online activation and deactivation can be used.

When using the Cloud Controlled Network Floating licenses on a NavView computer that is not on the internet or if it is the connection is poor and inconsistent, Offline activation and deactivation can be used.

1.3.3.1   Activate License Online

1. From the Home ribbon, click on **License** in **General** group to open the **License Information** dialog.

2. If not already configured for Cloud Controlled Network Floating licenses:
   a. From the License provider drop-down select Cloud Controlled Network Floating License

b. Click **Apply** to apply the license type and expand the dialog for controlling license sessions
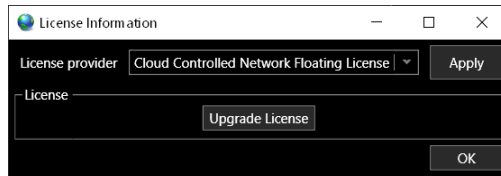
3. In the **Session Details** section.
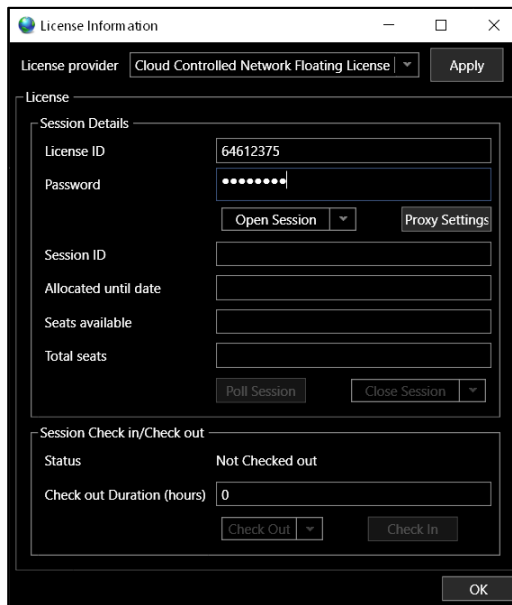
a. Enter the **License ID** (provided by 4D Nav)
b. Enter the **Password** (provided by 4D Nav)
c. Without expanding the dropdown, click **Open Session**
d. The dialog will populate with the license information
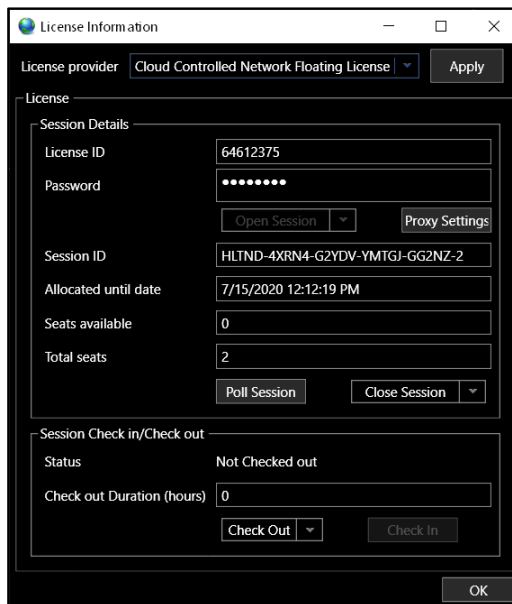
i. **Session ID**: The unique GUID assigned to this session

ii. **Allocated until date**: Date/time of the next time NavView will check for the licenses validity online and update the session period

iii. **Seats available**: Number of licenses left that are available for other users to open

iv. **Total seats**: The total number of licenses associated with this License ID

4. Click **OK** to close this dialog

1.3.3.2 Licensing Errors

If NavView reports an error when activating a license, the reason for the error can be checked at [SOLO Server Automation web service error & return codes - SoftwareKey Support](). Alternatively, contact 4D Nav and provide the error number.

1.3.3.3 Deactivate License Online

1. Open the License Information dialog.

2. Without expanding the dropdown, click Close Session.
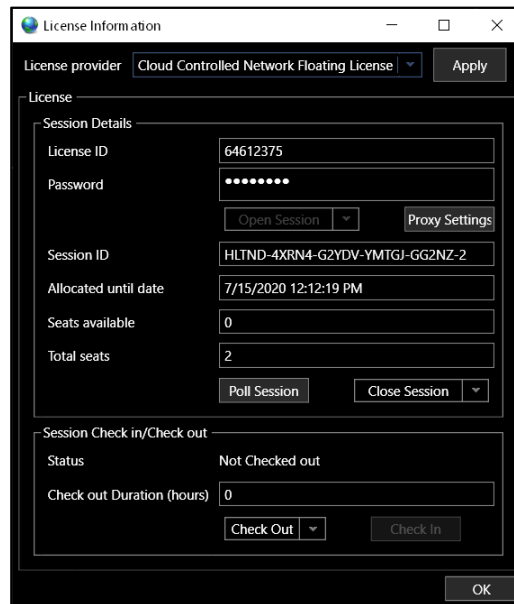
3. A message stating that a NavView license is not present will appear, close it by clicking **OK.**

4. Click **OK** to close the License Information dialog.

1.3.3.4 Activate License Offline

1. If activating a license offline for the first time on a NavView PC:
   a. Exit NavView if running
   b. Using a File Explorer, navigate to the C:\ProgramData\4D Nav\NavView folder and delete the License.xml and/or Session.xml files if they are present
   c. Contact 4D Nav (support@4dnav.com), providing your License ID and request the associated License.xml file
   d. Copy the received License.xml file to the C:\ProgramData\4D Nav\NavView folder
   e. Launch NavView

2. Open the **License Information** dialog.
    a. In the Session Details section.
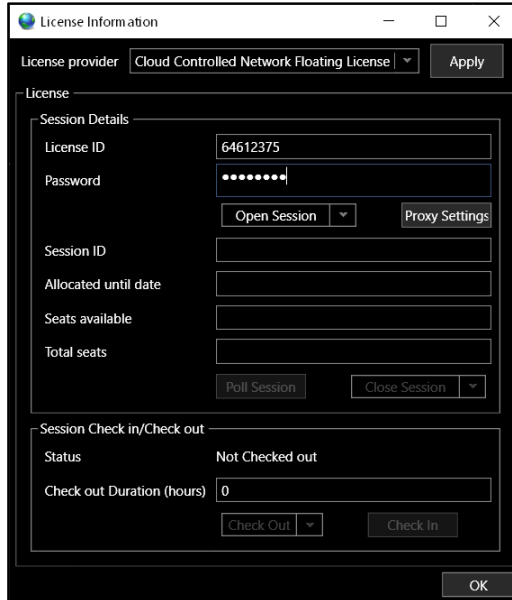
   i. Enter the License ID (provided by 4D Nav)
   ii. Enter the Password (provided by 4D Nav)
   iii. From the Open Session dropdown, select **Offline Request**, the **Offline License Request** window will open
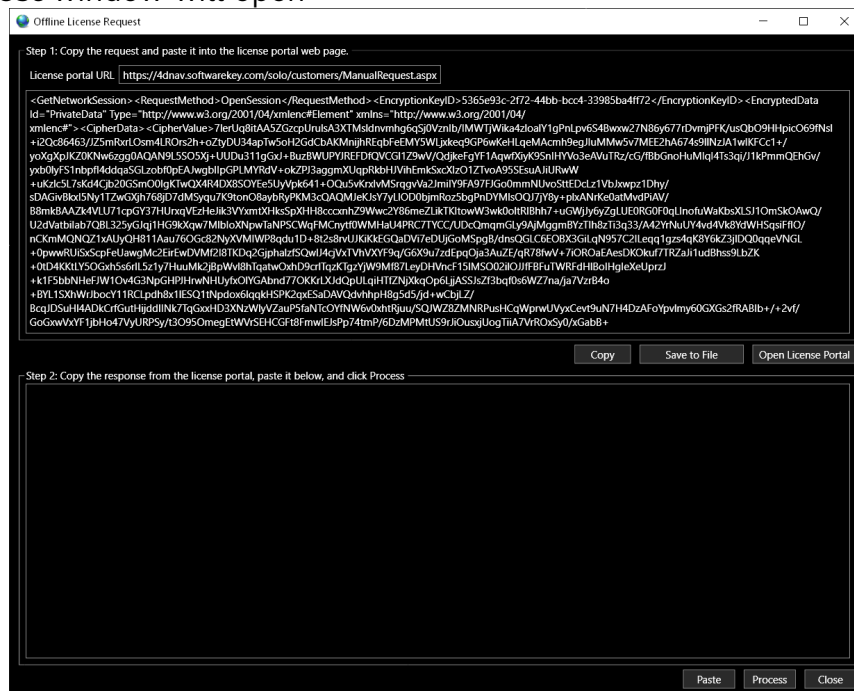
   b. If the computer is currently offline, got to step 3, otherwise continue here.
      i. Click **Copy** to copy the text displayed in the Step 1 panel to the clipboard
   ii. Click the Open License Portal button

Note: If the computer is currently online, it is recommended that the user just use the standard process to open the session (see Activate License Online)

Note: Do not close the Offline License Request window.

iii. In the **License Portal** that opens in your browser
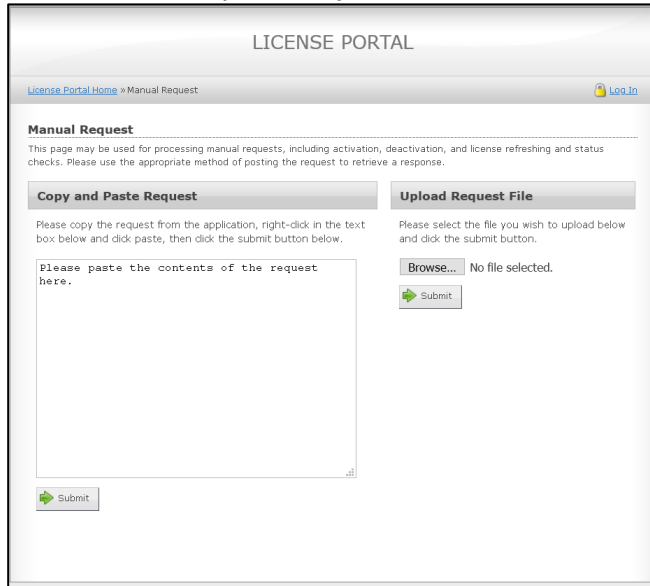
iv. Right mouse click in the panel on the left (where it says, "Please paste the contents of the request here.") and click Paste
v. Click the **Submit** button below this panel
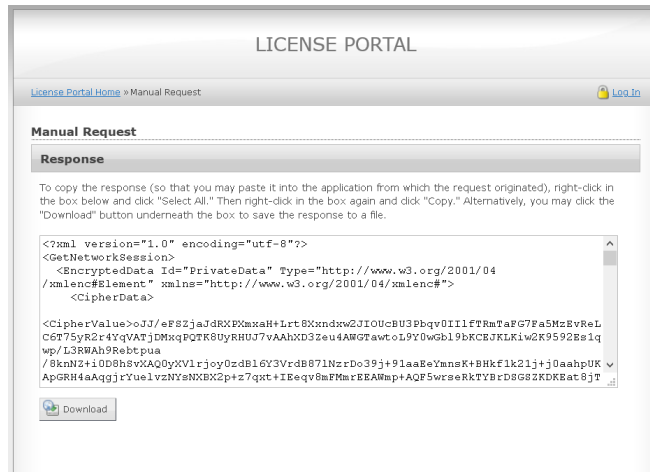vi. When the **License Portal** refreshes
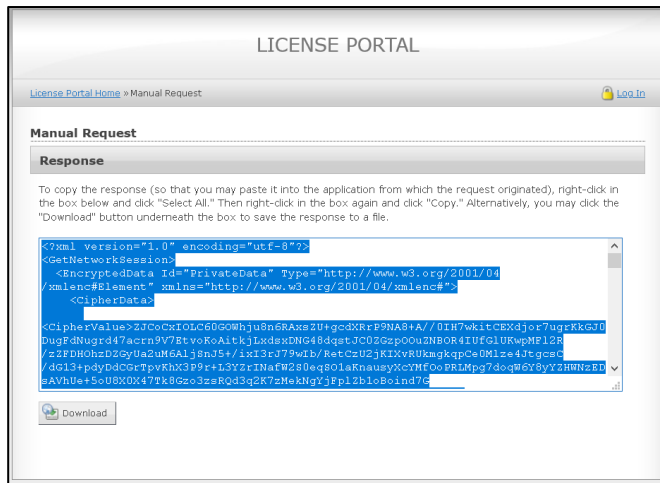
vii. Right mouse click in the panel and click on **Select All**
viii. Right mouse click in the panel and click **Copy** the contents to the clipboard
c. Return to NavView and in the Offline License Request window
   i. Click Paste to paste the text from the License Portal into the Step 2 (lower) panel
   ii. Click Process to apply the license
   iii. If successful, the **Offline License Request** window will close, and the License Information dialog will populate with the license information (go to step 4)

3. If the computer is currently offline, in the **Offline License Request** window:
   a. Click **Save to File** to save the text displayed in the Step 1 panel to a file
   b. Copy this file to a computer that is on the internet

c. From the computer the file was copied to, open a web browser and go to https://4dnav.softwarekey.com/solo/customers/ManualRequest.aspx
d. On the License Portal page under Upload Request File
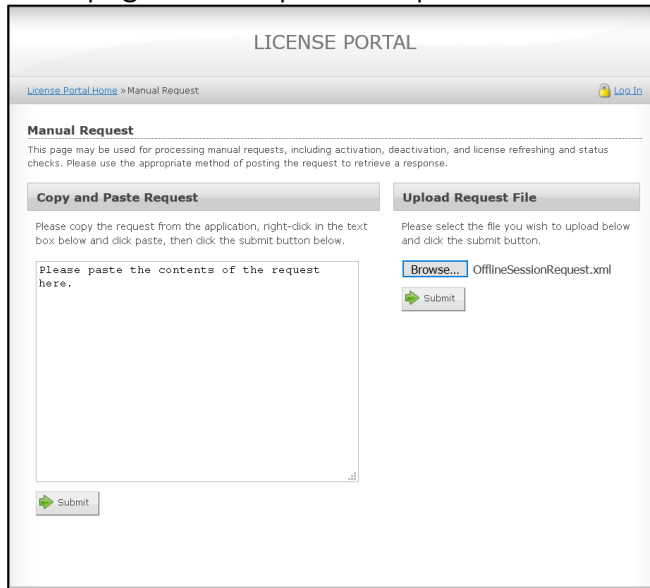
i. Click **Browse** and navigate to and select the file copied from the NavView computer
ii. Click **Submit**

e. When the **License Portal** refreshes
    i. Click **Download** and save the response as a file
    ii. Copy this file to the NavView computer
f. On the NavView computer, open the new file in a text editor
    i. Right mouse click in the text and click on **Select All**
    ii. Right mouse click in the text and click **Copy** to copy the contents to the clipboard
g. Return to NavView in the Offline License Request window
    i. Click **Paste** to paste the contents of the clipboard into the Step 2 (lower) panel
    ii. Click **Process** to apply the license
    iii. If successful, the **Offline License Request** window will close

4. The **License Information** dialog will populate with the license information.

1.3.3.5   Deactivate Offline License

1. Open the License Information dialog.

2. If the computer is currently online with internet access, in the License Information dialog in the Session Details section.
    a. Click the **Close Session** button
    b. A message stating that a NavView license is not present will appear, close it by clicking **OK**
    c. Click **OK** to close the License Information dialog

3. If the computer is currently not online or is experiencing poor, intermittent internet access, in the **License Information** dialog in the **Session Details** section
    a. Expand the **Close Session** dropdown and select **Offline Request**
    b. In the Offline License Request window
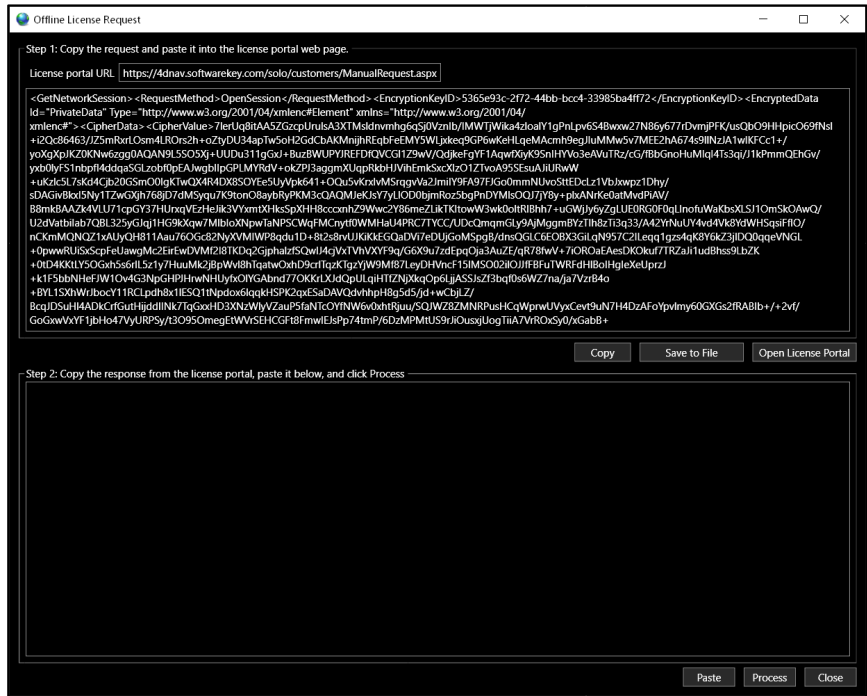
i. Click **Save to File** to save the text displayed in the Step 1 panel to a file

c. Copy this file to a computer that is on the internet

d. From this online computer, open a web browser and go to
https://4dnav.softwarekey.com/solo/customers/ManualRequest.aspx
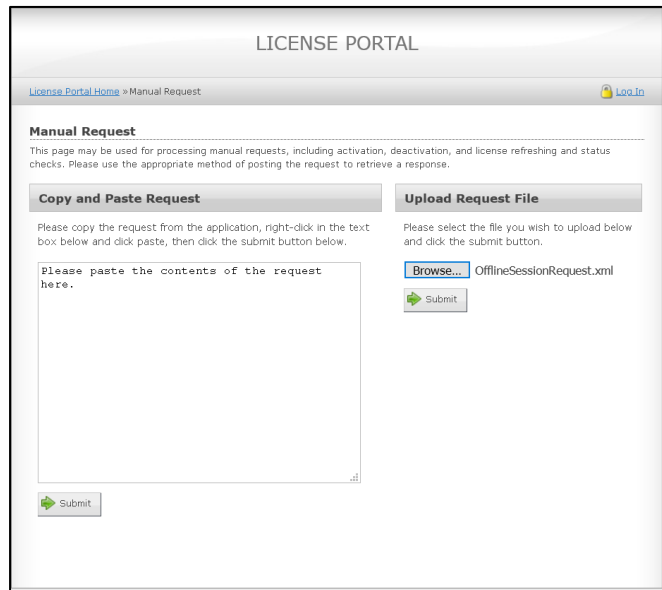
e. On the License Portal page under Upload Request File

i. Click **Browse** and navigate to and select the file copied from the NavView computer

ii. Click **Submit**
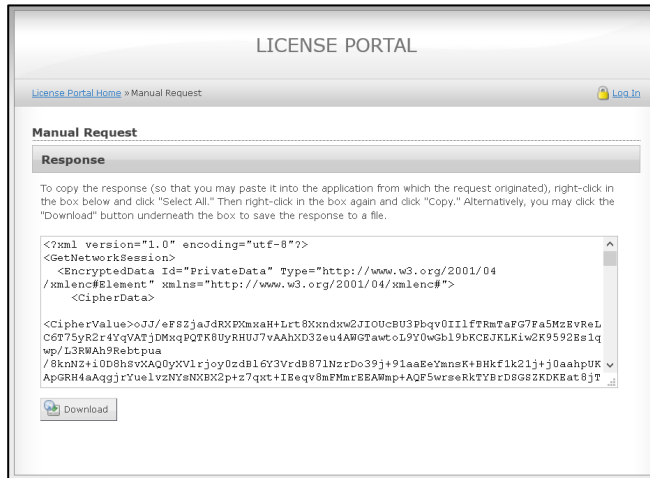
LICENSE PORTAL

f. When the **License Portal** refreshes
   i. Click **Download** and save the response as a file
   ii. Copy this file to the NavView computer
g. On the NavView computer, open the new file in a text editor
   i. Right mouse click in the text and click on **Select All**
   ii. Right mouse click in the text and click **Copy** to copy the contents to the clipboard
h. Return to NavView in the Offline License Request window
   i. Click **Paste** to paste the contents of the clipboard into the Step 2 panel
   ii. Click **Process** to apply the license
   iii. If successful, the **Offline License Request** window will close

4. A message stating that a NavView license is not present will appear, close it by clicking **OK.**

5. Click **OK** to close the License Information dialog.

1.3.3.6 Unavailable License

If when attempting to open a session, no licenses/seats are available the user will be presented with the following message. If this is encountered, contact 4D Nav.
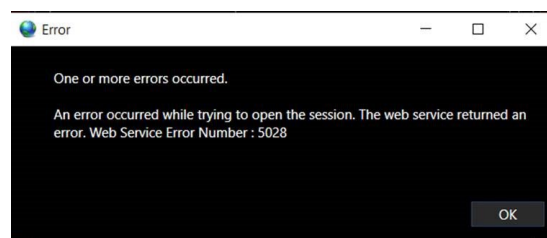
1.3.3.7 Session Check Out

When a Cloud Controlled Network Floating license is used on a NavView computer with no or poor internet access, it is recommended that the session opened with that license be **checked out**. When checked out, NavView will use the license for the period specified during the checkout process without attempting to validate over the internet. Upon expiry of the period, NavView will revert to unlicensed, and the license will once again be available to be activated.

The option to check out a session is only available after a session is opened. The following steps are based on a session already being opened.

Note: A checked out session cannot be checked back in. Once a session is checked out the associated license is not available to anyone else until the checkout period has expired, at which point the license becomes available again.
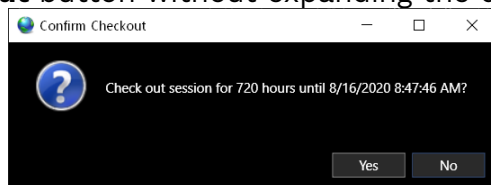
1. Open the License Information dialog.

2. in the Session Check In/Out section.

a. Enter the number hours to check the license out for in **Check out Duration (hours)**

Note: Maximum period a session can be checked out depends upon the type of license that has been provided. These vary from 15, 30 and 120 day licenses.

b. If the computer currently has internet access
   i. Click the **Check Out** button without expanding the dropdown list

   ii. When prompted to confirm the check out, click **Yes** or **No** accordingly
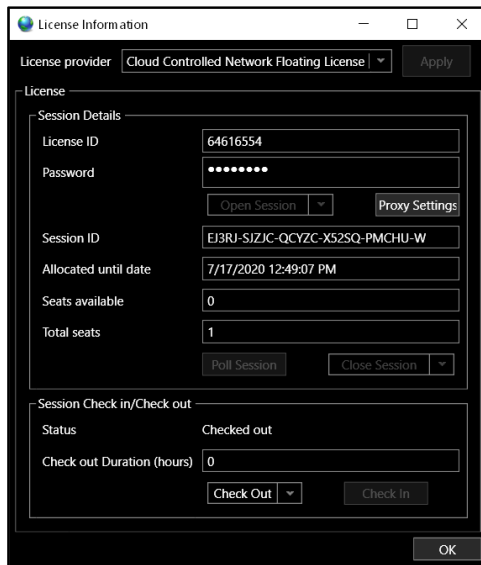
iii. The **License Information** dialog now displays the Checkout status of the session

iv. Click **OK** to close this dialog

c. If the computer currently does not have internet access

   i. Expand the Check Out drop down and click on Offline Request
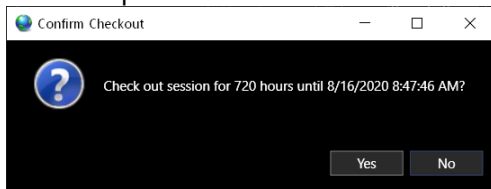
    ii. When prompted to confirm the check out, click **Yes** or **No** accordingly and the **Offline License Request** window will open
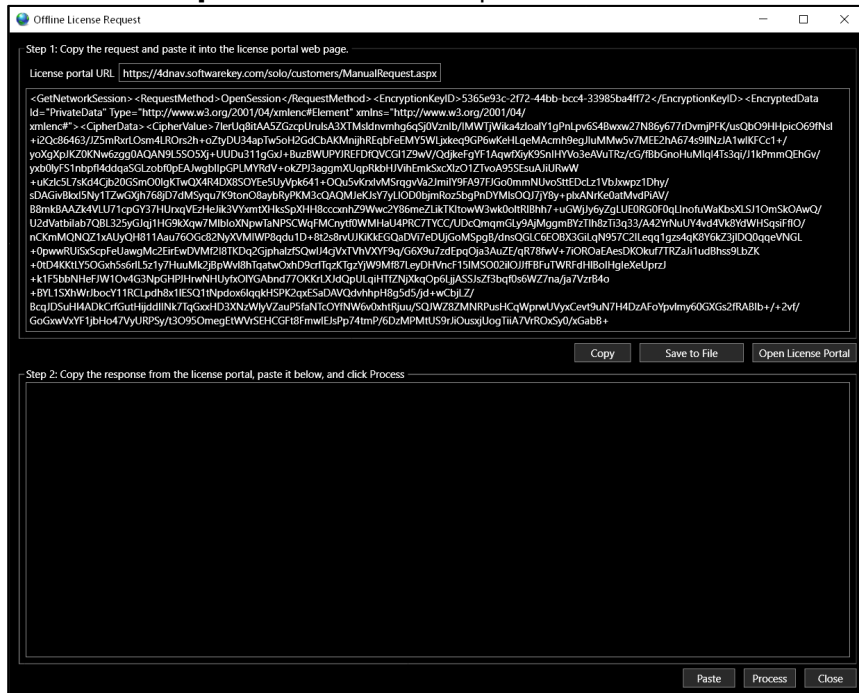

iii. Click **Save to File** to save the text displayed in the Step 1 panel to a file

iv. Copy this file to a computer that is on the internet

v. From the computer the file was copied to, open a web browser and go to https://4dnav.softwarekey.com/solo/customers/ManualRequest.aspx

vi. On the License Portal page under Upload Request File
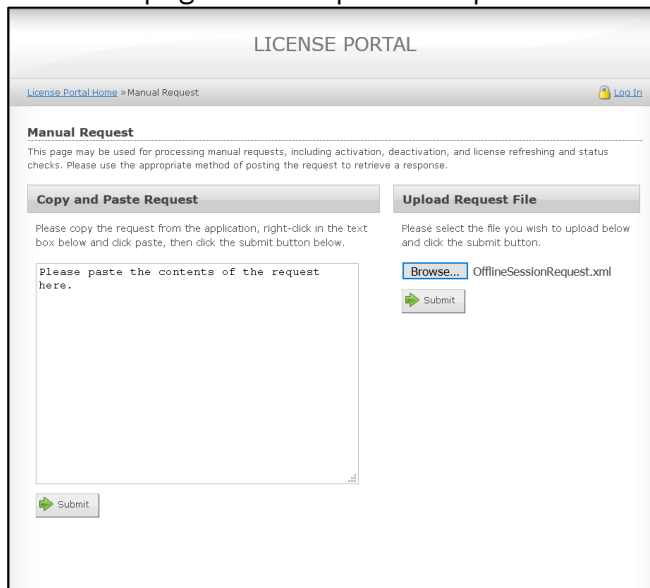
A. Click **Browse** and navigate to and select the file copied from the NavView computer

B. Click **Submit**
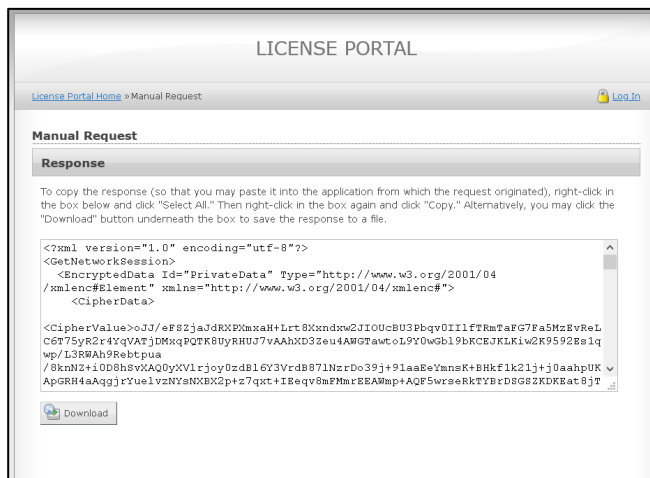
vii. When the **License Portal** refreshes
   A. Click **Download** and save the response as a file
   B. Copy this file to the NavView computer

viii. On the NavView computer, open the new file in a text editor
   A. Right mouse click in the text and click on **Select All**
   B. Right mouse click in the text and click **Copy** to copy the contents to the clipboard

ix. Return to NavView in the Offline License Request window
   A. Click **Paste** to paste the contents of the clipboard into the Step 2 panel
   B. Click **Process** to apply the license

x. If successful, the **Offline License Request** window will close

xi. The **License Information** dialog will display the Check Out status

xii. Click **OK** to close this dialog

1.4 User Roles and Privileges

NavView supports .NET framework role-based security to ensure only authenticated and authorized users have access to restricted application functionality and configuration. The intent is to assist in preventing users inadvertently making critical configuration changes to NavView.

Note: By default, Roles and Privileges are enabled. If it is desired that they not be enabled, this must be requested when the NavView installation is provided by 4D Nav as it is a setting when creating the installation.

The following Roles are supported. Throughout the User's Guide where applicable, the Role with the required privilege level to execute or access the respective setting or feature will be identified.

- User, e.g., ROV Pilot, Bridge supervisor (default Role)
  - Username: User
  - Password: user
- Online, e.g., Online surveyor
  - Username: Online
  - Password: online
- Supervisor, e.g., Project surveyor
  - Username: Supervisor
  - Password: supervisor
- Administrator, e.g., Party Chief
  - Username: Admin
  - Password: admin

Note: The default role is a User which is considered to always be logged in.

At any time, a user can log into NavView to execute an action that requires that user's Role privileges, and then log out.

1.4.1 Roles Status/Access

On the right side of the ribbon a drop-down box displays the current Roles status and provides access to the appropriate Roles control. For example, if a user (other than User) is logged in, the respective username is displayed and if the drop-down is clicked, the option to log out is presented and can be clicked. If no one is logged in, i.e., NavView is operating with the default User, the status is displayed as *Not logged in* and if the drop-down is clicked the option to log in is presented and can be clicked.
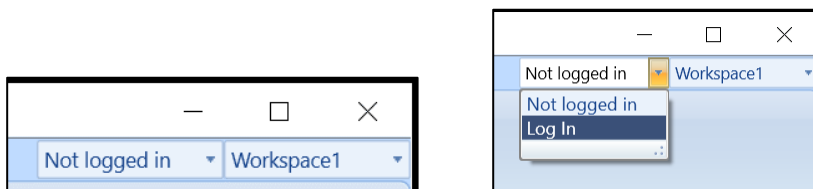

Note: If Roles is not enabled, this control is not present.

1.4.2 Roles Log In/Out

Clicking on Log In, in the Roles control, opens the Log In prompt shown below where the user enters their username and password and clicks on the Login button. In addition, should it be desired that the user not accidentally remain logged in, the Timeout box can be checked and the desired elapsed time before NavView will automatically log the user out can be entered before clicking the Login button.
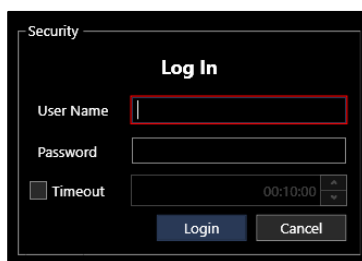
Clicking on Log Out in the Roles control opens the User Role Log Out prompt shown below.
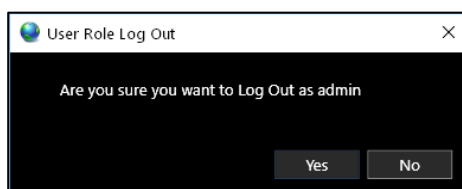

1.5 Navigating NavView

NavView follows the standard approach to program presentation and navigation. The NavView window has a Quick Access Toolbar (QAT), a File Menu, and Ribbons. Some windows have a

context sensitive ribbon tab that is displayed as part of the main ribbon when that window has the focus.

Right mouse clicking on the ribbon or QAT pops up a menu allowing the operator to control the location of the QAT and whether the ribbon is to be minimized or not.

Note: The contents of the ribbons and therefore the options and views are dependent upon the modules activated and available.
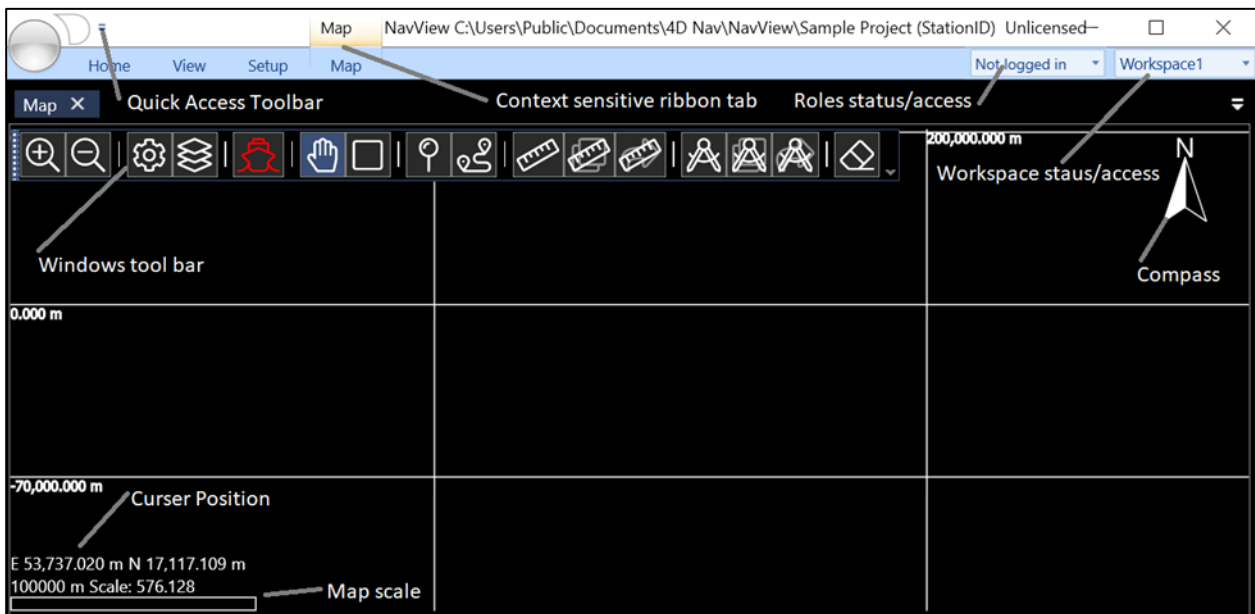

1.5.1 Quick Access Toolbar

The Quick Access Toolbar (QAT) is a configurable toolbar. Items in the ribbon that are accessed on a regular basis, e.g., Waypoints, can be added to the QAT to simplify access, as well as auto hide the ribbon menu.

To add a button to the QAT, right mouse click on the button of interest in the ribbon and select *Add to Quick Access Toolbar*. Once added, right mouse clicking on that button in the ribbon will show the *Add to Quick Access Toolbar* option greyed out.

To remove a button from the QAT, right mouse click on that button in the QAT and select *Remove from Quick Access Toolbar*. Once removed, right mouse clicking on that button in the ribbon will show the *Add to Quick Access Toolbar* option available again.

1.5.2 File Menu

The File Menu provides access to project options Open, New, Import, Save As and Exit. Clicking Open or New launch the respective wizard. These are discussed in detail in the Projects section.
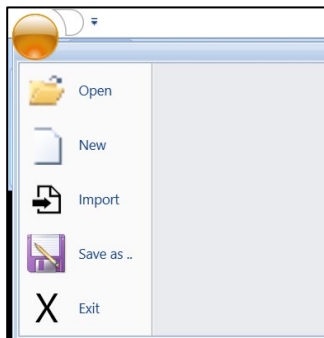
1.5.3   Workspace Status/Access

On the right side of the ribbon is a drop-down box that displays the name of the currently selected Workspace. If the drop-down is clicked a list of workspaces present is displayed and the desired workspace can be selected.

1.5.4   Ribbons

The ribbons provide access to the NavView features, options and configurations dependent upon the modules licensed in use. These are summarized in this section to provide a basic overview for the user. Some icons in the ribbons are dependent upon modules and licenses present. Details can be found in the respective Guide sections.

Note: If Roles is enabled and an item is not available to the currently logged in user, it will not be enabled in the ribbons, greyed out.

1.5.4.1   Home Ribbon

The Home ribbon provides access to tools and supporting data files.
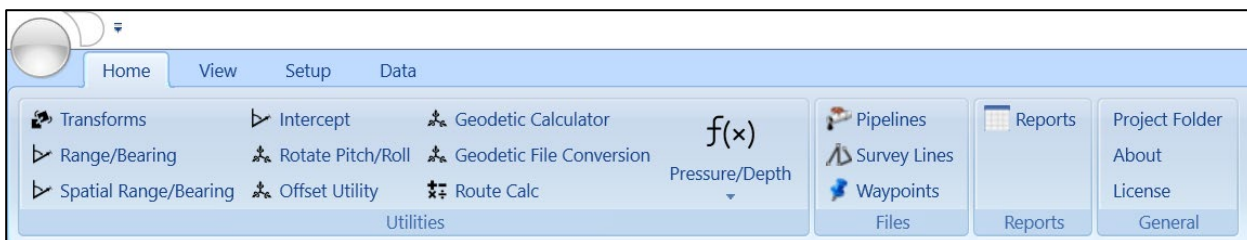
- Utilities

Transforms:	Utility to perform Datum transforms and coordinate conversions
Range/Bearing:	Utility to perform geographic/grid direct and inverse calculations
Spatial Range/Bearing:	Utility to perform geographic/grid inverse coordinate operation and project the distance to the terrain/seafloor
Intercept:	Utility to calculate the intercept position and time from one dynamic vehicle to another
Rotate Pitch/Roll:	Utility to rotate attitude from one heading to another

Offset Utility:	Utility to calculate offset locations based on reference or remote positions
Geodetic Calculator:	Utility to calculate geographic/grid positions
Geodetic File Conversion:	Utility to convert a file from one geodetic system to another
Route Calc:	Utility to calculate a position along a line and offline distances relative to a selected route, survey line or pipeline and vice versa, plus calculate the map projection, ellipsoid and spatial distances to a specified target along the same route from this position (used for Cut to Length operations)
Pressure to Depth:	Utility to calculate depth from pressure

- **Files**

Pipelines:	Opens the pipeline entry and configuration window
Survey Lines:	Opens the survey line entry and configuration window
Waypoints:	Opens the waypoint entry and configuration window

- **Reports**

|	
Reports:	Opens the Report dialog from which configuration reports can be generated
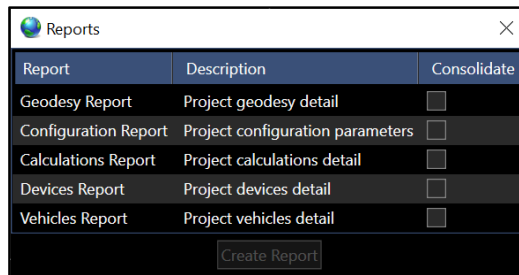
- **General**

About:	Displays current version of software installed, the software support email address and what is enabled in the license
Project Folder:	Launches File Explorer to the respective Project\Local\Station folder
License:	License configuration

1.5.4.2 View Ribbon

The View ribbon provides access to open windows for viewing and monitoring operations.

Note: Most windows can have multiple independently configured instances opened simultaneously. However, there are some windows that only support a single instance being opened at any one time. These are designated in the following summary by an asterisk.
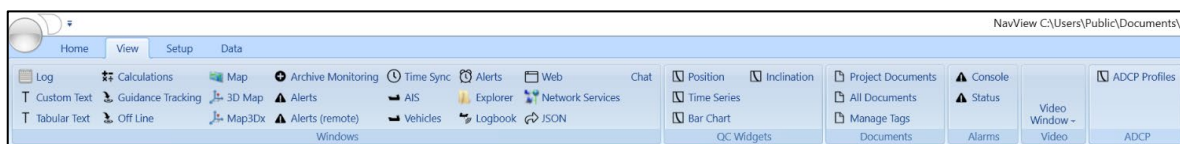
- Windows
Log:	Audit log window
Custom Text:	Comprehensive configurable text window
Tabular Text:	Comprehensive configurable dual column text window
Calculations:	Calculation status and monitoring window
Guidance Tracking:	Bulls eye style guidance window
Off Line:	Bar style offline guidance window
Map:	Configurable 2D map view
3D Map:	Configurable 3D map view
Map 3Dx	Configurable enhanced 3D map view
Archive Monitoring:	Displays data archive/logging control
Alerts (System):	Listing of configured system alerts and their state
Alerts (remote):	Listing of configured Alerts on Remote NavView stations and their state
Time Sync:	Displays time sync status
AIS:	Tabular display of all real time AIS vehicles being tracked
Vehicles:	Tabular display of all real time and remote vehicles being tracked
Alerts (List):	Displays a listing of alerts
Explorer*:	NavView system explorer view
Logbook:	Opens an Excel spreadsheet for manual log entries
Web:	Opens a web browser view
Network Services*:	Status and configuration of network service updating
JSON:	Status of publishing of JSON data to endpoint
Chat:	Opens a Chat window used to chat with other NavView clients on the network

- QC Widgets
Position:	Configurable chart display and comparison of position data
Time Series:	Configurable time series window
Bar Chart:	Configurable bar chart display
Inclination:	Configurable inclination display

- Documents
 | Project Documents: | Add documents to project folder |
  | --- | --- |
  | All Documents: | List of documents added to project folder |
  | Manage Tags: | List of available Tags that can be attached to a document |

- Alarms
Console:	Tabular display of alarms status
Status:	List of configured alarms

- Video
View Window:	Access to selection of video feeds to display

■ ADCP
   ADCP Profiles: Display of captured ADCP data

When a NMEA GPS device is added and configured to output specific messages, GPS Status and Satellite Status is added to the View ribbon. Refer to Windows section, GPS Status for NMEA messages required.

■ GPS Status
        NMEA Input Status: Display SV sky plot with tracking and positioning statistics (dependent on NMEA input message selection)

■ Satellite Status
    NMEA Input Sat Status: Display bar charts representing satellite SNR and solution PRN range residuals (dependent on NMEA input message selection)
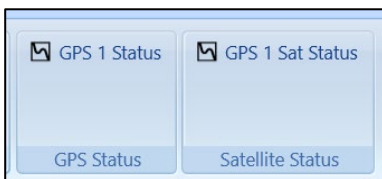
1.5.4.3 Setup Ribbon

The Setup ribbon provides access to the configuration of the components that control how NavView is used.
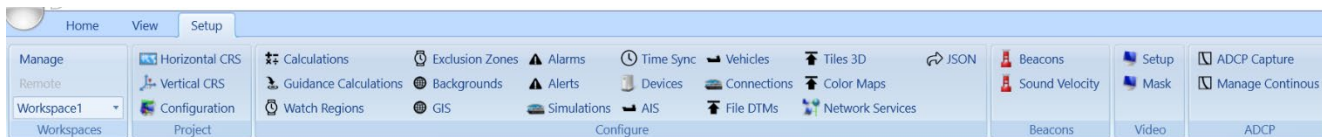
■ Workspaces
    Manage: Manage and configure workspaces on local NavView
    Remote: Manage and configure workspaces on a remote NavView

■ Project
    Horizontal CRS: Configuration of the horizontal CRS (Coordinate Reference System) to be used for the project and their associated transformations
    Vertical CRS: Configuration of the Vertical CRS (Coordinate Reference System)
    Configuration: Configuration of the project details and display preferences

■ Configure
    Calculations: Configuration and management of calculations
    Guidance Calculations: Configuration and management of guidance items
    Watch Regions: Configure Watch Regions
    Exclusion Zones: Configure Exclusion Zones
    Backgrounds: Management and configuration of background drawings
    GIS: Management and configuration of GIS layers

Alarms:	Configuration of system alarms
Alerts:	Configuration of alerts
Simulations:	Opens the simulation window from which simulators are added, removed, configured and manipulated
Time Sync:	Configuration and monitoring of time synchronization settings
Devices:	Opens the IO Devices window from which devices can be added, removed, configured and monitored
AIS:	Integration and configuration of AIS devices
Vehicles:	Configuration and management of vehicles including static offsets
Connections:	Configuration and management of the connections, e.g., Articulated Frame, Layback
File DTMs:	Option to load DTM from XYZ ASCII grid, ESRI ASCII grid, or flat without requiring enabling of Database Services
Tiles 3D:	Adding and configuration of seabed tiles to be displayed in 3Dx Map
Color Maps:	Adding and configuring color schemes for tiles displayed in 3Dx Map
Network Services:	Configuration of the NavView network service connection
JSON:	Configure a JSON *Vessel Report Set* sent to an HTTP cloud service

- Beacons

Beacons:	Configuration and management of acoustic beacons required for USBL operations
Sound Velocity:	Import and management of sound velocity profiles for review and analysis and use with Pressure to Depth calculations

- Video

Setup:	Setup video channels
Mask:	Configure the masking of the video input to select area to be used for processing

- ADCP

ADCP Capture:	Configure the capture of ADCP data for processing and analysis
Manage Continuous:	Opens the Manage ADCP Logging view where ADCP Profiles can be setup (Continuous or Static)

1.5.4.4   Data Ribbon

The Data ribbon is a context sensitive ribbon that is present when Database Services are enabled. It provides access to the configuration of quick and average position fixes.

- Position Fixes

Quick Fixes:	Configuration of Quick Fixes
Active Fixes:	Access view where position average fixes can be controlled and managed
Query:	Access query window where position average fixes can be accessed from database
New:	Launch Position Average Fix creation wizard
Fix Profiles:	Manage Fix Profiles that are used to simplify setting up Position Average Fixes locally and executing Position Average Fixes remotely
Remote Fixes:	Position Average Fix from a Remote System

1.5.4.5   Map Ribbon

The Map ribbon is a context sensitive ribbon that is present when a 2D Map view is open and has the focus. It provides access to the configuration and control of the map display. Its features are detailed in Windows section, Map Window.
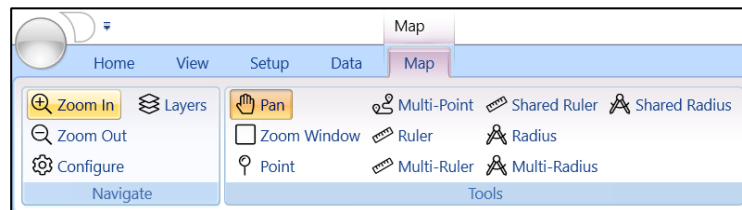
1.5.4.6   3D Map Ribbon

The 3D Map ribbon is a context sensitive ribbon that is present when a 3D Map view is open and has the focus. It provides access to the configuration and control of the map display. Its features are detailed in the Windows section, 3D Map.
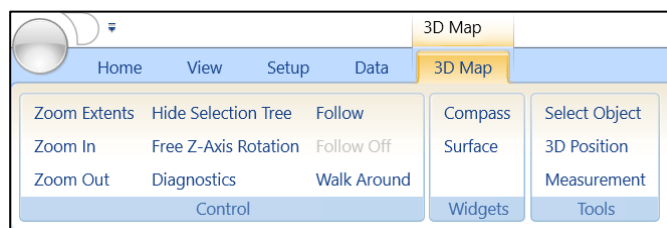
1.5.4.7   Window Toolbars and Ribbon Tabs

Several windows support their own tool bars. These include ones that appear in the top left corner of the respective window when the mouse is in that window (e.g., Map window) and permanent tool bars at the top of the window (e.g., IO devices window).

Several windows also have their own context sensitive ribbon tabs (e.g., 3D Map window). These are added to the ribbon when the window is open and has the focus. Note that regardless of how many of a given windows of the same type are opened, the context sensitive ribbon is only added once.

1.5.4.8   Window Docking

NavView supports flexible window management and docking. This enables the operator to easily configure the workspace to optimize the viewing area for their requirements.

When a window is opened it is placed in its default location in the main window. These default locations vary for each window. If multiples of the same window type are opened, they are initially added as tabs to the window the first is located in.

A window can be a Document window, a Dockable/Tool window or a Floating window. These determine how they behave. Like the default location, each window when initially opened has its own default window type. For example, a Text window defaults to a dockable window, a Map window defaults to a document (tab) window. The types are illustrated in below.

| Document Window | Dockable/Tool Window | Floating Window |

Document window features are as follows:

- Are always open and visible
- Cannot be dragged and relocated as a whole (unless containing a single tab which can be dragged)
- Cannot be closed (each tab must be closed, closing the last tab closes the window)
    - Have a ⊟ button that when clicked list those windows it contains
- Clicking on a window in this list will select the respective tabbed window for display
- Windows contained within the parent window
    - Are tabbed at the top with their title in the respective tab

- Closed by clicking the 'X' associated with that window/tab
- Can be relocated by clicking on the tab and dragging

Dockable/Tool window features are as follows:

- Has title bar
- Can be dragged and relocated by clicking the title bar and dragging
- Cannot be closed as whole (each tab must be closed, closing the last tab closes the window)
- Windows within the parent window
  - Are tabbed at the bottom of the parent window with their title in the tab
  - Can be relocated by clicking on the tab and dragging
- Has ▼ 📌 buttons where:
  - Clicking the ▼ button displays a list of options
    - Float: Pops the window associated with the currently selected tab out to become a floating window
    - Dock as a Tabbed Document: Docks the window associated with the currently selected tab in a Document window
    - Auto Hide: Toggles the Auto Hide setting for the entire window (see Pin/Unpin below)
    - Close: Closes the window associated with the currently selected tab
  - Clicking the 📌 button toggles the Pin and Unpin setting for the entire window
    - Pin: Window stays open and visible
    - Unpin: Window auto hides against the respective side, respective tab displays when it is moused over

Floating window is a type of Dockable window whose distinct features are as follows:

- Is always visible and in front of Document and Dockable windows
- Can be relocated by clicking in the title bar and dragging
- Has ▼ 🔲 buttons where:
  - Clicking the ▼ button displays a list of options
    - Dock: Docks the window in a Dockable window
    - Dock as a Tabbed Document: Docks the window in a Document window
    - Close: Closes the window
  - Clicking the 🔲 button maximizes the window to the full extent of the workspace

When a window is being dragged, the options for docking are presented by docking icons as shown below. To employ the desired icon to place the window being dragged, the mouse is placed over the icon and the left mouse button released. The docking feature of each icon is detailed below.
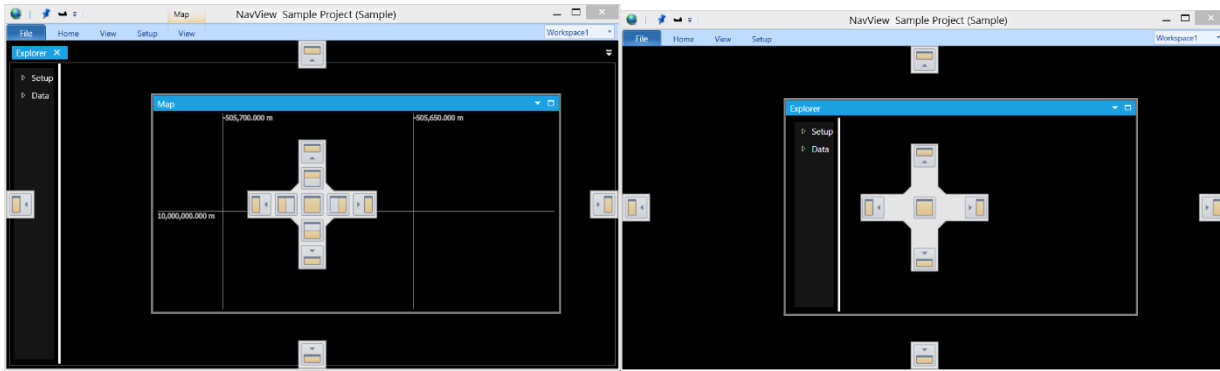
This icon is displayed at each edge of the workspace. Releasing the window over this icon pins the window the respective edge as a Dockable window.

This icon is displayed in the center of the window the mouse is currently in (referred here as the target window). The individual icons making up this larger icon each represent a docking option. The presence of the individual icons depends upon the type and configuration of the target window, how other windows already present within the window are placed.

Releasing the window over this icon pins the window as a Dockable window against the respective edge of the target window. This option is present when the target widow is a Document or Dockable window but not if it is a Floating window.

Releasing the window over this icon puts the window in the respective portion of the target window as the same type of window as the target. This option is present when the target window is a Document or Floating window but not if it is a Dockable window.

Releasing the window over this icon adds the window to the target window as a tab of the same type as the target window. This option is present in all target windows.

1.5.5   Workspace

NavView supports multiple workspaces providing the operator with another means to manage the viewing area. A workspace is essentially the viewing area associated with NavView, including any windows that have been dragged outside of the application's window. Each workspace can be configured independently with respect to the windows displayed and their arrangement. When switching between workspaces, only those windows associated with the selected workspace are displayed, including any that lie outside of the application window.

1.5.5.1 Managing Workspaces

The creation and removal of workspaces is done via the Workspaces Manager, opened by clicking on the Manage button in the Workspaces section of the Setup ribbon.
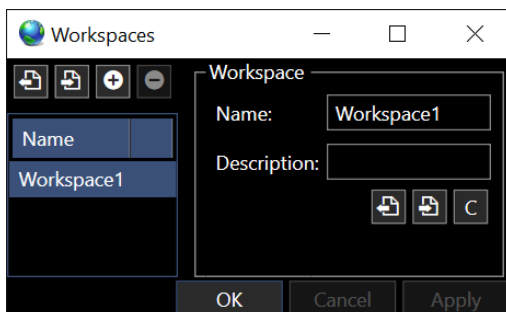

- Left Panel: Displays the name of the current workspaces

  - Click to export the workspace layout collection
  - Click to import a workspace layout collection
  - Click to add a workspace
  - Click to remove the selected workspace

- Right Panel: Displays the name and description of the workspace selected in the left panel

  - Click to export this workspace layout
  - Click to import a workspace layout
  - Click to clear the workspace

To apply changes made, click **Apply**, to revert click **Cancel**.

1.5.5.2 Remote

The Remote Workspace feature allows the user to access any workspace of any Station present on any NavView client on the network for viewing and configuring before pushing back to the source Station for application.
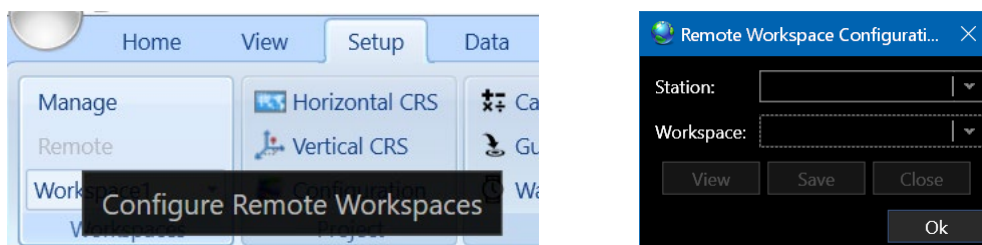
- Station:
  - Drop-down listing all Stations of all NavView clients present on the network configured for the project

- Select the Station whose Workspace is to be viewed
  - Workspace:
    - Drop-down listing all workspaces configured for the selected Station
    - Select the workspace to be viewed
  - View:
    - Click to display the selected workspace
    - Available for editing
  - Save:
    - Once completed viewing and editing, click Save to save the workspace on the source NavView's Station and trigger its refresh if currently being displayed
  - Close/OK
    - Closes this dialog

1.5.5.3 Switching Workspace

See Workspace Status/Access.

1.6 Technical Support

4D Nav provides technical support via our online Help Desk at https://4dnav.zendesk.com. Submission of issues and suggestions to the help desk ensures that they are directed to the appropriate person and addressed in a timely fashion.

The Help Desk allows you to:

- Submit a request (issue, suggestion, etc.)
- Track request submitted by yourself and anyone else in your company
- Access the NavView knowledge base

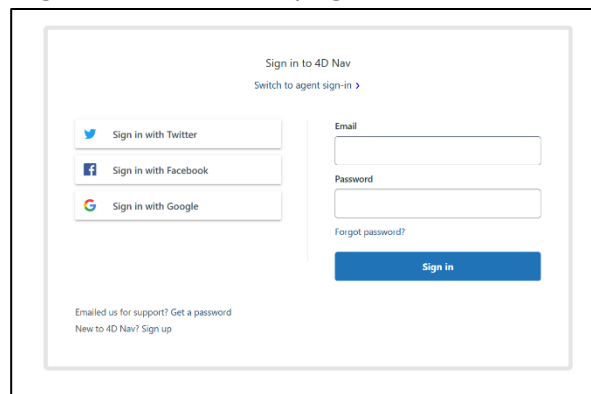4D Nav also provides telephone support line for urgent issues.

- Support telephone: +1 (832) 516-6891
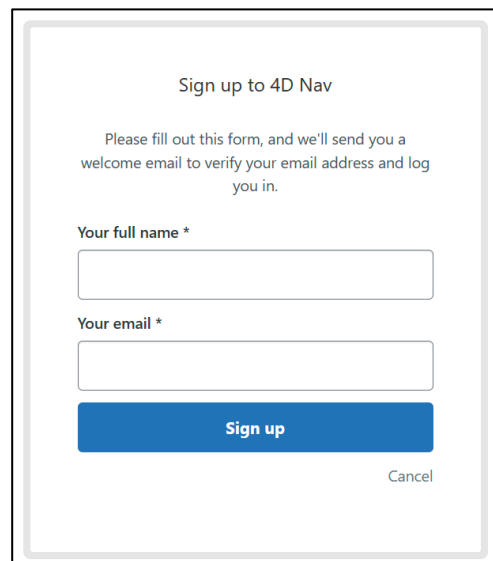
1.6.1 How to Sign on to the Help Desk

1. Using an internet browser, navigate to https://4dnav.zendesk.com
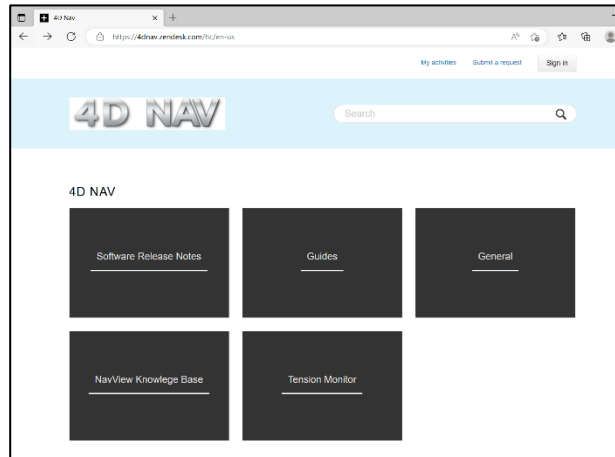
2. Click **Sign in** in the top right corner of the page.

a. Click **Sign up** and fill out form

Note: A valid e-mail address is required, a confirmation e-mail is sent to the address entered that must be responded to complete the sign-up process.

b. Respond to the confirmation e-mail sent to the e-mail account entered.

3. When the confirmation e-mail is received, click on "Create a password" to confirm your e-mail address, this will open the Help Desk so you can create your password and complete the e-mail address confirmation process.

1.6.2   How to Submit a Request

4. Log onto the Help Desk and click on Submit a request.

Note: It is not required to sign in to submit a request. This allows emails to Tech Support to trigger creation of a ticket
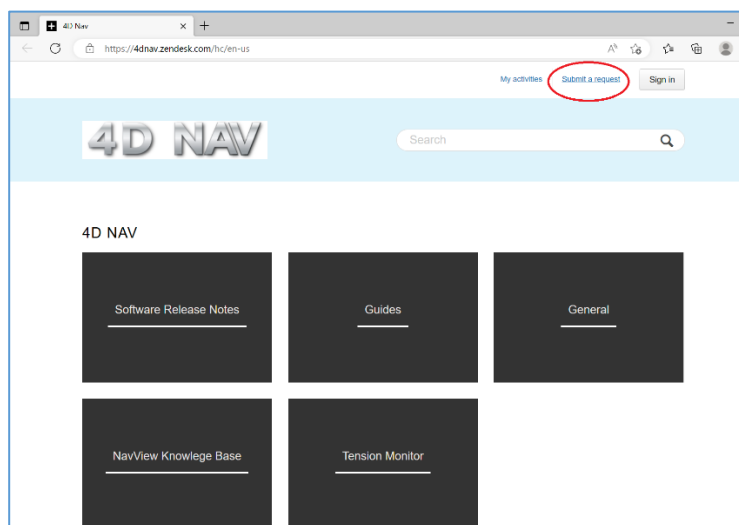
5. Complete the form and click Submit.

1.6.3   How to Track a Request

1.   Log onto the Help Desk and click on My activities.