VIAVI

XPERTrak 4.1
Quick Start Guide for Administrators

Notice

Every effort was made to ensure that the information in this manual was accurate at the time of printing. However, information is subject to change without notice, and VIAVI reserves the right to provide an addendum to this manual with information not available at the time that this manual was created.

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Before you begin

Thank you for purchasing XPERTrak™! This guide provides installation and setup instructions to get you up and running with the software as soon as possible.

Technical assistance

If you require technical assistance, call 1-844-GO-VIAVI / 1.844.468.4284.

Outside US: +1-855-275-5378

Email: **CATVsupport@viavisolutions.com**

For the latest TAC information, visit

https://support.viavisolutions.com

https://www.viavisolutions.com/en/services-and-support/support/technical-assistance

Downloading XPERTrak software

1. Go to the **VIAVI Licensing Portal** to download the XPERTrak software.

    https://licensing.viavisolutions.com/ecp

2. Log in with the username and password provided by VIAVI.

3. Download the XPERTrak software to your server.

    Contact us at 1-844-GO-VIAVI for complete instructions.
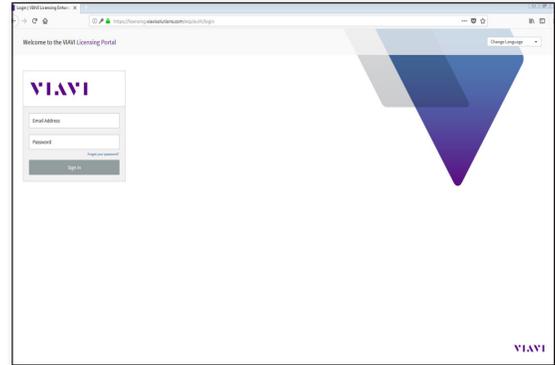
If you did not receive login information, please visit **http://www.viavisolutions.com/en-us/services-and-support/support/customer-service** and choose your country.

Installing XPERTrak on Windows

For Linux installation, see *"Installing XPERTrak on Linux" on page 9.*

1. Right click on the executable file and run as administrator.
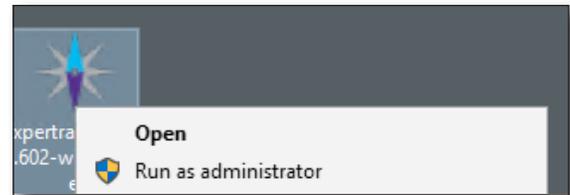
    The **InstallAnywhere Process** will begin.
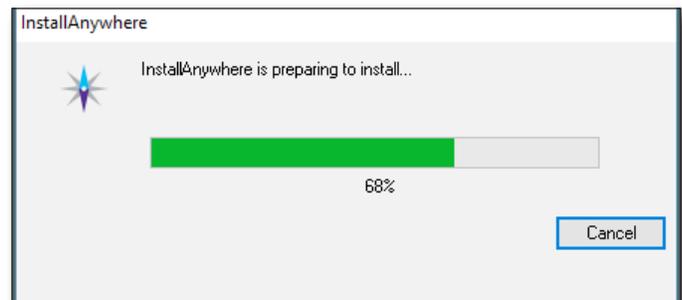
    After it completes, the **Introduction** page is displayed. Click **Next**.
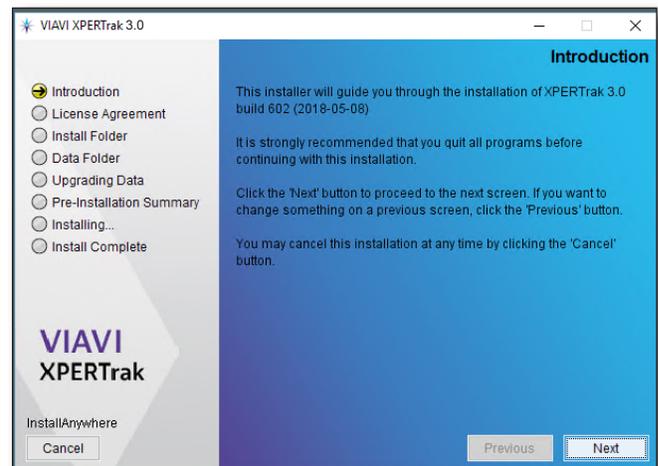
2. Accept the license agreement and click **Next**.
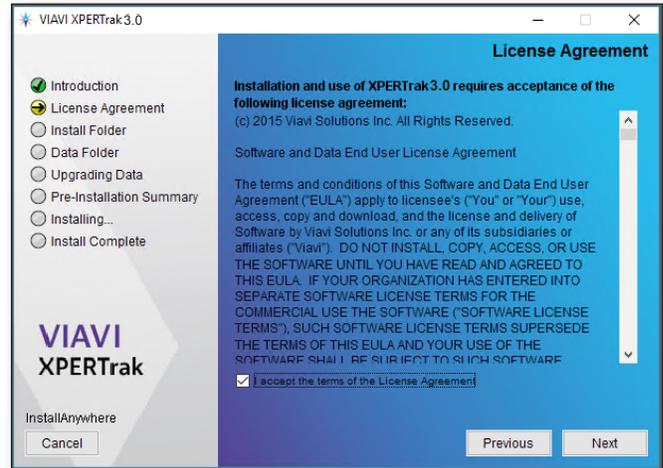
Locking Code

3. A ***locking code*** will then be generated by the system. Copy this code (including the asterisk) for the next step.

   The locking code is like a "fingerprint" of the host machine and is used to uniquely tie the software license to the specific host machine.
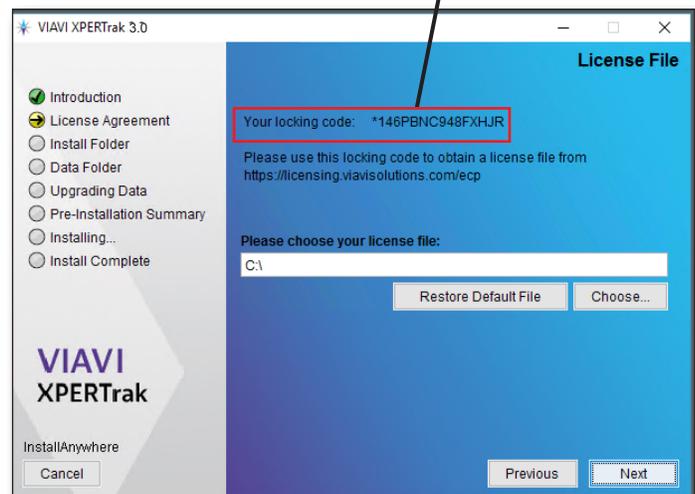
4. Next, go back to the **VIAVI Licensing Portal** to activate and obtain your license file.

   The XPERTrak installation requires a valid license file to proceed with an upgrade installation. For a new installation, a license file may be added afterwards.

5. Log in again, if necessary.

6. Use the locking code you copied from the XPERTrak installer and activate your license. Your license file will be emailed to you shortly.
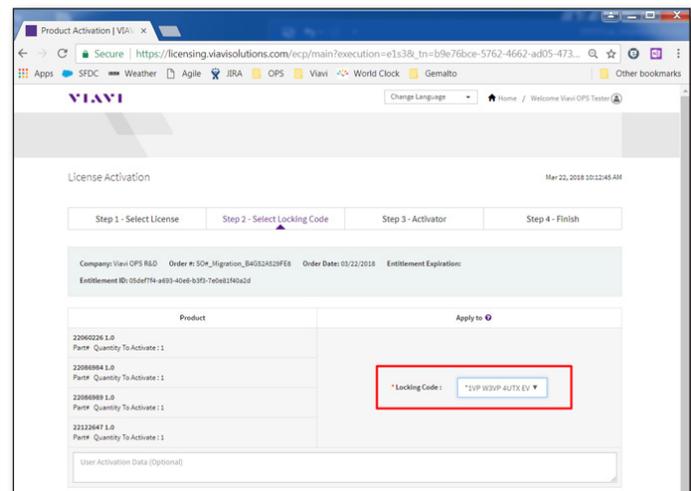
7. Save the license file to your XPERTrak server.

   Contact us at 1-844-GO-VIAVI for complete instructions.

8. Back on the **License File** screen, select **Choose** and browse to the license that you downloaded to your XPERTrak server.
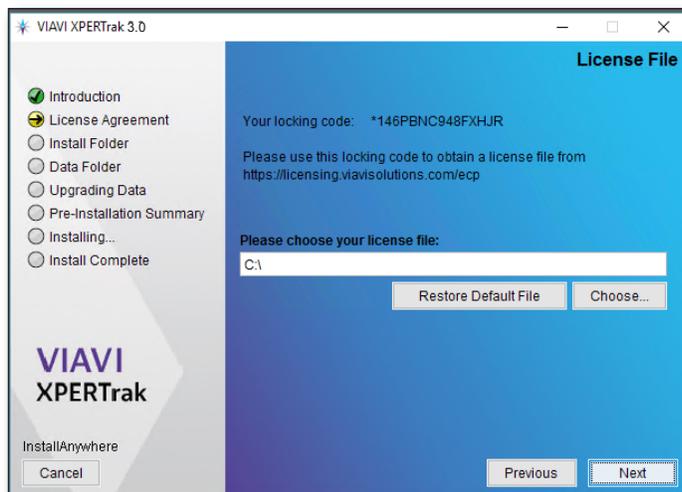
9. Select the license file and then select **Open**.
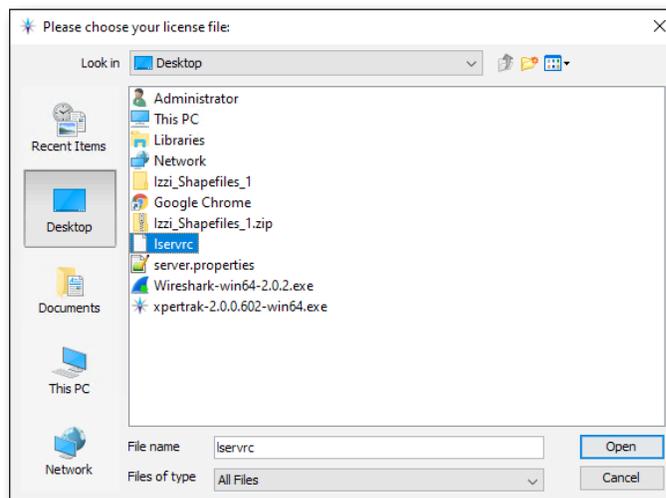
10. The **License File** screen should now update with the path to the file. Click **Next**.

XPERTrak Quick Start Guide
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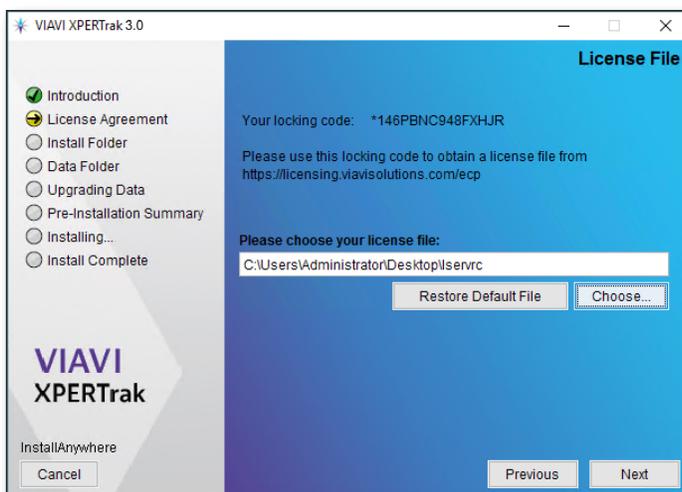
11. The **Install Folder** screen displays the path where the XPERTrak files will install onto your server. Click **Next**.
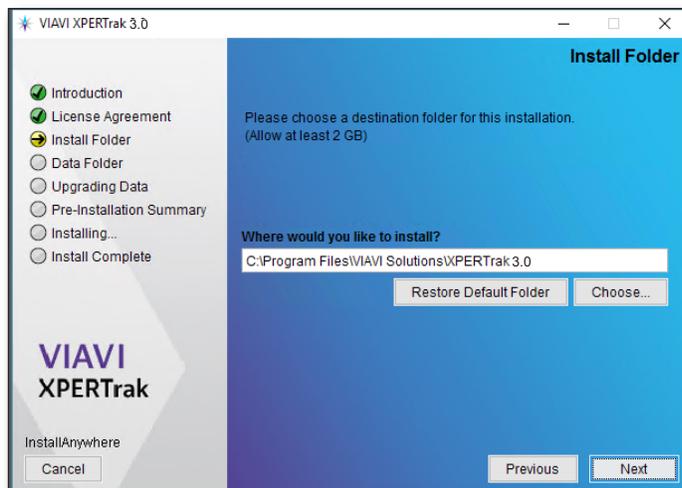
12. The **Data Folder** screen displays the path where all the data is stored. Please first refer to the XPERTrak server specifications before selecting a path or drive.

    After a drive or path has been selected, click **Next**.
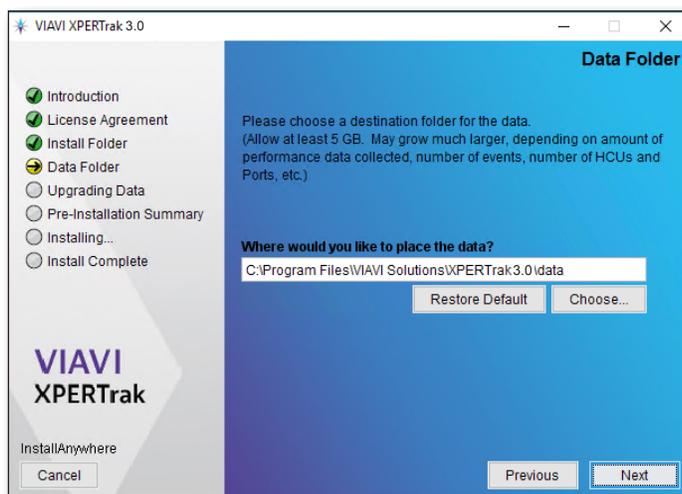
13. Review the **Pre-Installation Summary**, then click **Install**.
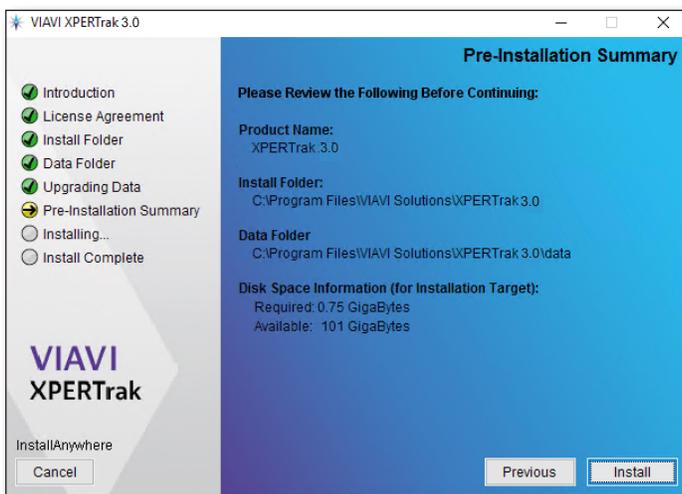
The installation process will begin. This may take some time due to significant updates to MYSQL, etc. **It is important that you do not stop the process.**
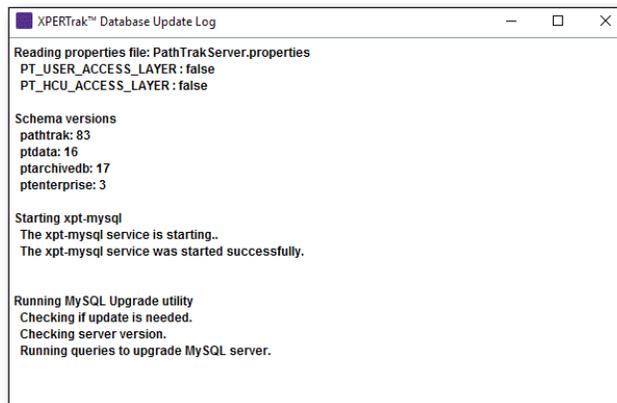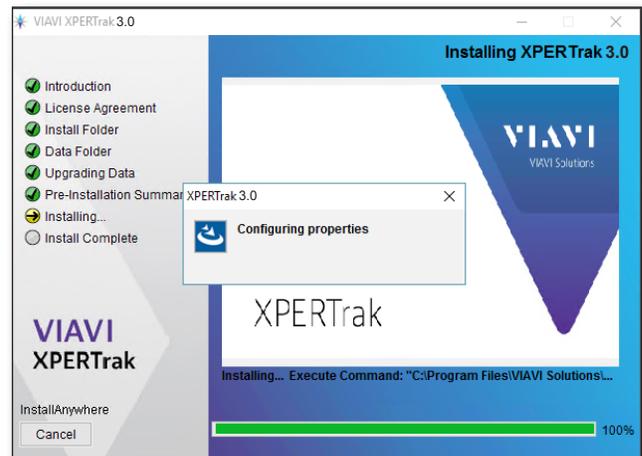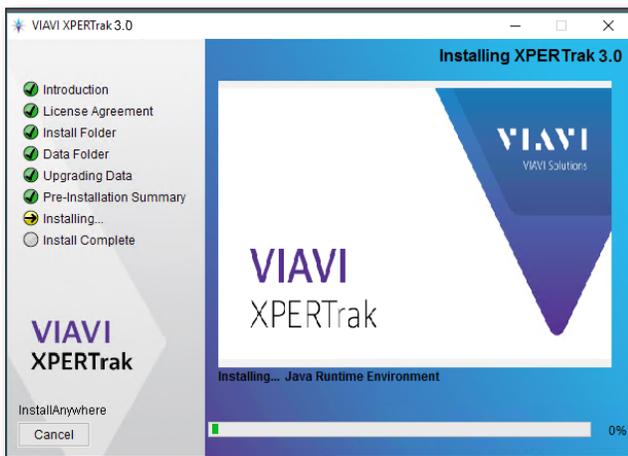
14. After the installation is complete, click **Done**.

    Congratulations, XPERTrak is now installed!
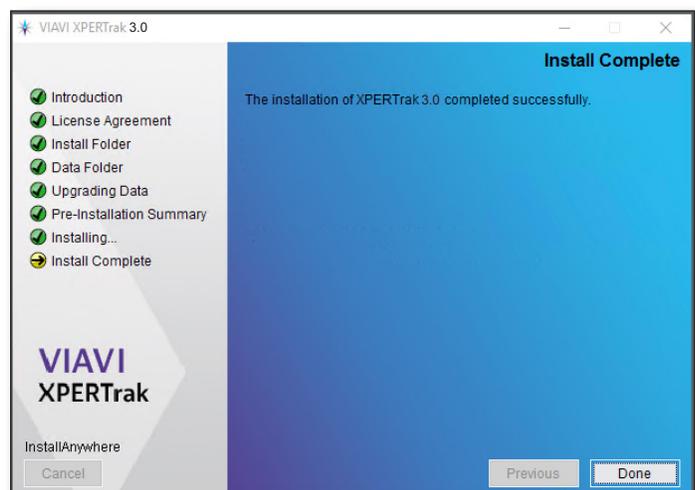
Installing XPERTrak on Linux

For Windows installation, see *"Installing XPERTrak on Windows" on page 4.*

See the *XPERTrak Release Notes* for server requirements.

Linux prerequisite setup

1. Create xpertrak user with SUDO permission

   a. Switch to SUDO user

      $ su

   b. Create user and set the password when prompted

      # adduser xpertrak

      # passwd xpertrak

   c. Enable xpertrak user to SUDO without password

      # visudo

      Scroll down to the root setting and add a setting for xpertrak user. (Press "i" to insert the new line shown in green below, then press <esc> and exit with ":wq")

      The section to edit should look like this:

      ## Next comes the main part: which users can run what software on
      ## which machines (the sudoers file can be shared between multiple
      ## systems).
      ## Syntax:
      ##
      ## user MACHINE=COMMANDS
      ##
      ## The COMMANDS section may have other options added to it.

      ##
      ## Allow root to run any commands anywhere
      root ALL=(ALL) ALL
      xpertrak ALL=(ALL) NOPASSWD:ALL

   d. Verify user was added correctly

      # su xpertrak   … switch user to the newly created user

      $ ls /root   … error will say permission denied

      $ sudo ls /root   … this should succeed without error

      $ exit   … switch back to SUDO user

2. Create storage path for MySQL Data

mkdir /home/xpertrak/mysqldata   … creates folder for database storage

chown -R 27:27 /home/xpertrak/mysqldata   … content owned by MySQL (27)

3. Create storage path for backups

mkdir /backup   … creates folder for backup storage

chmod 777 /backup   … allow write by MySQL (27) and Tomcat (428) users

4. Disable SWAP (required by Kubernetes)

free -h   … lists swap space usage

vi /etc/fstab   … turn off SWAP

   a. comment out (#) line near end that is similar to this:
      # /dev/mapper/os-swap swap swap defaults 0 0

   b. (Requires reboot, but can be delayed until later)

5. Check and Set static hostname (see requirements above)

hostnamectl   … shows current hostname info

hostnamectl set-hostname --static <desired hostname>

6. Reboot, then login as xpertrak user

reboot

XPERTrak prerequisite setup

1. Download installation tar.gz file and place in the xpertrak home folder using a curl command, etc.

   $ cd /home/xpertrak

   See *"Downloading XPERTrak software" on page 4* for more details.

2. Unarchive the installation archive

   $ tar xzf xpertrak-<version>.tar.gz

   This should extract the following files:

File	Content
sample-config.yaml	Configuration file that should be copied and modified for custom environment
echoid64	Utility used for licensing
echoid.dat	Utility used for licensing
nci	NCI Installer executable
nci-base-<version>.tar	NCI Base PaaS (Helm, Kubernetes, Docker)
xpt-mysql-<version>.tar	XPERTrak MySQL database service
xpt-tomcat-<version>.tar	XPERTrak Apache Tomcat web application & data collection service

3. Verify the unarchived files above are owned by xpertrak user and myssqldata is owned by 27

   $ ls -l

   If necessary, change ownership with:

   $ sudo chown xpertrak:xpertrak <filename>

   $ sudo chown -R 27:27 mysqldata

4. Verify nci file is executable

   $ ls -l ./nci

   If necessary, set executable with:

   $ sudo chmod +x ./nci

5. Verify echoid64 file is executable

   $ ls -l ./echoid64

   If necessary, set executable with:

   $ sudo chmod +x ./echoid64

6. Obtain the locking code for generating an XPERTrak license

   $ sudo ./echoid64 -d > lockingcode.txt ; ip addr >> lockingcode.txt

   Send the lockingcode.txt to VIAVI to get the appropriate license for this server.

7. Create your custom config.yaml file based on your custom environment needs. See instructions in the file for setting data location, RAM sizes, etc.

   $ cp sample-config.yaml config.yaml

   $ free -h   ... verify available RAM

   $ df -hT   ... verify available storage space in file system

   $ vi config.yaml   ... edit

Install prerequisite verification

1. Verify logged in as xpertrak user

   $ whoami

2. Verify user has SUDO access

   $ ls /root   ... error will say permission denied

   $ sudo ls /root   ... this should succeed without error

3. Verify the Operating System is an approved version. RedHat/CentOS/Oracle. 7.9, 8.3

   $ cat /etc/*-release

4. Verify the installation files are owned by xpertrak user and ./nci is executable

   $ ls -l

5. Verify content of config.yaml configured as needed for your environment

   $ cat config.yaml

Install

Start the installer

```
$ ./nci install --config config.yaml
```

The installer will do a preflight check, then likely will update the operating system. After 5-10 minutes, it may ask you to reboot the server.

```
$ sudo reboot
```

Give the server a few minutes to reboot, then login as xpertrak user and restart the installer

```
$ ./nci install --config config.yaml
```

This portion of the install may take an hour to complete.

Enable OS updates (optional)

Skip this section unless the installer indicates that OS updates are required.

1. Determine which OS you are using.

   ```
   $ cat /etc/*-release
   ```

2. Download the OS update tar file appropriate for your OS (centos7, centos8, oracle7, oracle8, redhat7, redhat8) and place in the xpertrak home folder using a curl command, etc.

   ```
   $ cd /home/xpertrak
   ```

   See *"Downloading XPERTrak software" on page 4* for more details*.*

3. Edit the config.yaml file. Enable the appropriate OS patch and enable OS updates in the nci-base section.

4. Re-run the installer

   ```
   $ ./nci install --config config.yaml
   ```

Install SSL Certificates

1. Obtain the SSL certificate files valid for your server & network.

File	Content
ca.pem	(Base64 PKCS#1 RSA format) CA public certificate of the signing chain for this server's certificate. Must include the CA root certificate and each intermediate certificate in the chain used to sign this server's certificate. Each certificate in the chain must have a unique subject name.
server-key.pem	(Base64 PKCS#1 RSA format) Private key for this server. Must contain "-----BEGIN RSA PRIVATE KEY-----". Must not require a pass phrase.
server-cert.pem	(Base64 PKCS#1 RSA format) Public certificate for this server. Must be signed (directly or via a certificate chain) by the CA certificate in ca.pem. Must include this server's URL(s) which will be used by clients or other servers to access this server.
keystore.p12	(PKCS#12 format) Private key and public certificate for this server. Must be signed (directly or via a certificate chain) by the CA certificate in truststore.p12. The public certificate must include this server's URL(s) which will be used by clients or other servers to access this server. For typical XPERTrak servers, this keystore.p12 will include the server private key (server-key.pem) and server public certificate (server-cert.pem) and the certificate chain used to sign this server's public certificate (ca.pem).

2. Copy certificate files to folder: /home/xpertrak/certs

3. Switch to root user

   $ sudo su

4. Copy the 3 files (ca.pem, server-cert.pem, server-key.pem) to the mysqldata folder

   # cp /home/xpertrak/certs/*.pem /home/xpertrak/mysqldata

5. Change owner to MySQL (27)

   # chown -R 27:27 /home/xpertrak/mysqldata

6. Copy the 2 files (ca.pem, keystore.p12) to the cfg/certs folder under the persistent volume mapped to home-pvc-xpt-tomcat-0

   # cp /home/xpertrak/certs/ca.pem /var/lib/docker/persistent/pvc-<some UUID>_xpt-tomcat-default_home-pvc-xpt-tomcat-0/cfg/certs/

   # cp /home/xpertrak/certs/keystore.p12 /var/lib/docker/persistent/pvc-<some UUID>_xpt-tomcat-default_home-pvc-xpt-tomcat-0/cfg/certs/

7. Change owner to tomcat (428)

   # chown -R 428:428 /var/lib/docker/persistent/pvc-<some UUID>_xpt-tomcat-default_home-pvc-xpt-tomcat-0/cfg/certs/

8. Exit root user

   # exit

9. Log into the xpt-tomcat container instance & cd to certs folder

   $ kubectl exec -it -n xpt-tomcat-default xpt-tomcat-0 -- /bin/bash

   $$ cd /var/lib/xpertrak/cfg/certs

10. Remove any previous root certificate aliased as xpertrak-ca (if exists)

    $ /usr/local/openjdk-11/bin/keytool -delete -alias XPERTrak-CA -keystore truststore.p12 -storepass XPERTrak

11. Add CA to truststore.p12

    $$ /usr/local/openjdk-11/bin/keytool -importcert -noprompt -file ca.pem -alias XPERTrak-CA -keystore truststore.p12 -storepass XPERTrak

12. (Optional) Add any other required CA from cacerts to truststore.p12. These may be required to access other servers LDAP, email, etc.

    For example, the following command would add digicertglobalrootca to the trusted certificate authorities in truststore.p12.

    $$ /usr/local/openjdk-11/bin/keytool -importkeystore -noprompt -srckeystore /usr/local/openjdk-11/lib/security/cacerts -srcstoretype PKCS12 -srcstorepass changeit -alias digicertglobalrootca -destkeystore /var/lib/xpertrak/cfg/certs/truststore.p12 -deststoretype PKCS12 -deststorepass XPERTrak

13. Verify

    $$ /usr/local/openjdk-11/bin/keytool -list -keystore truststore.p12 -storepass XPERTrak

14. Exit the xpt-tomcat container.

    $$ exit

15. Shutdown the xpt-tomcat service:

    $ kubectl scale --replicas=0 -n xpt-tomcat-default statefulset/xpt-tomcat

16. Wait a few minutes for xpt-tomcat to finish writing to database and shutdown. It is shutdown when the following command no longer returns anything.

    $ kubectl get pods -A | grep xpt-tomcat

17. Shutdown the xpt-mysql service:

    $ kubectl scale --replicas=0 -n xpt-mysql-default statefulset/xpt-mysql

18. Wait for xpt-mysql to finish flushing data to the files and shutdown. It is shutdown when the following command no longer returns anything.

    $ kubectl get pods -A | grep xpt-mysql

19. Restart both services

    $ kubectl scale --replicas=1 -n xpt-mysql-default statefulset/xpt-mysql

    $ kubectl scale --replicas=1 -n xpt-tomcat-default statefulset/xpt-tomcat

> **NOTE:**
>
> **For additional help, contact 1-844-GO-VIAVI /1-844-468-4284 or *CATVsupport@viavisolutions.com*.**

Linux upgrade instructions

This upgrade assumes XPERTrak has already been installed on the system per the previous installation instructions in this guide.

If any of the verification steps fail, see *"Installing XPERTrak on Linux" on page 9*.

XPERTrak Upgrade Preparation

1. Login as xpertrak user

   $ whoami   … should show "xpertrak"

2. Download installation tar.gz file and place in the xpertrak home folder using a curl command, etc.

   $ cd /home/xpertrak

   See *"Downloading XPERTrak software" on page 4* for more details*.*

3. Unarchive the installation archive

   $ tar xzf xpertrak-<version>.tar.gz

   This should extract the following files:

File	Content
sample-config.yaml	Configuration file that should be copied and modified for custom environment
echoid64	Utility used for licensing
echoid.dat	Utility used for licensing
nci	NCI Installer executable
nci-base-<version>.tar	NCI Base PaaS (Helm, Kubernetes, Docker)
xpt-mysql-<version>.tar	XPERTrak MySQL database service
xpt-tomcat-<version>.tar	XPERTrak Apache Tomcat web application & data collection service

4. Verify the unarchived files above are owned by xpertrak user and myssqldata is owned by 27

   $ ls -l

   If necessary, change ownership with:

   $ sudo chown xpertrak:xpertrak <filename>

   $ sudo chown -R 27:27 mysqldata

5. Verify nci file is executable

   $ ls -l ./nci

   If necessary, set executable with:

   $ sudo chmod +x ./nci

6. Copy the 3 app versions near the top of the sample-config.yaml to your local config. yaml. Review the other settings in your config.yaml to ensure they are still valid. See instructions in the file for setting data location, RAM sizes, etc.

   $ head sample.config.yaml   ... lists app versions

   $ free -h   ... verify available RAM

   $ df -hT   ... verify available storage space in file system

   $ vi config.yaml   ... edit

Upgrade prerequisite verification

1. Verify logged in as xpertrak user

   $ whoami

2. Verify user has SUDO access

   $ ls /root   ... error will say permission denied

   $ sudo ls /root   ... this should succeed without error

3. Verify the Operating System is an approved version. RedHat/CentOS/Oracle. 7.9, 8.3

   $ cat /etc/*-release

4. Verify the installation files are owned by xpertrak user and ./nci is executable

   $ ls -l

5. Verify storage path for MySQL Database

  $ ls -l /home/xpertrak/mysqldata … content owned by MySQL (27)

6. If necessary, change ownership with:

  $ sudo chown 27:27 -R mysqldata

7. Verify storage path for backups

  $ ls -l /backup   … writable by MySQL (27) and Tomcat (428) users

8. Verify content of config.yaml configured as needed for your environment

  $ cat config.yaml

9. Verify both xpertrak services are currently running

  $ kubectl get pods -A | grep xpt

Upgrade

1. Uninstall the previous version of the 2 services (the configuration and data will be retained)

  $ ./nci uninstall --app_name xpt-tomcat

  $ ./nci uninstall --app_name xpt-mysql

2. Install the new versions as specified in the config.yaml

  $ ./nci install --config config.yaml

> **NOTE:**
>
> **For additional help, contact 1-844-GO-VIAVI /1-844-468-4284 or *CATVsupport@viavisolutions.com*.**

XPERTrak Quick Start Guide

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Logging in to XPERTrak

To bring up the XPERTrak login screen from your browser, type the IP address or host name for your server and press return.

If you are not using the default web port of 80, the format is:

IP of server:port/pathtrak

Example: http://10.10.10.10:8082/pathtrak

Enter your Username and Password, then select the **Sign In** button.

The default login for a new install is:

User: admin

Password: admin

The XPERTrak **Main Dashboard** will be displayed.
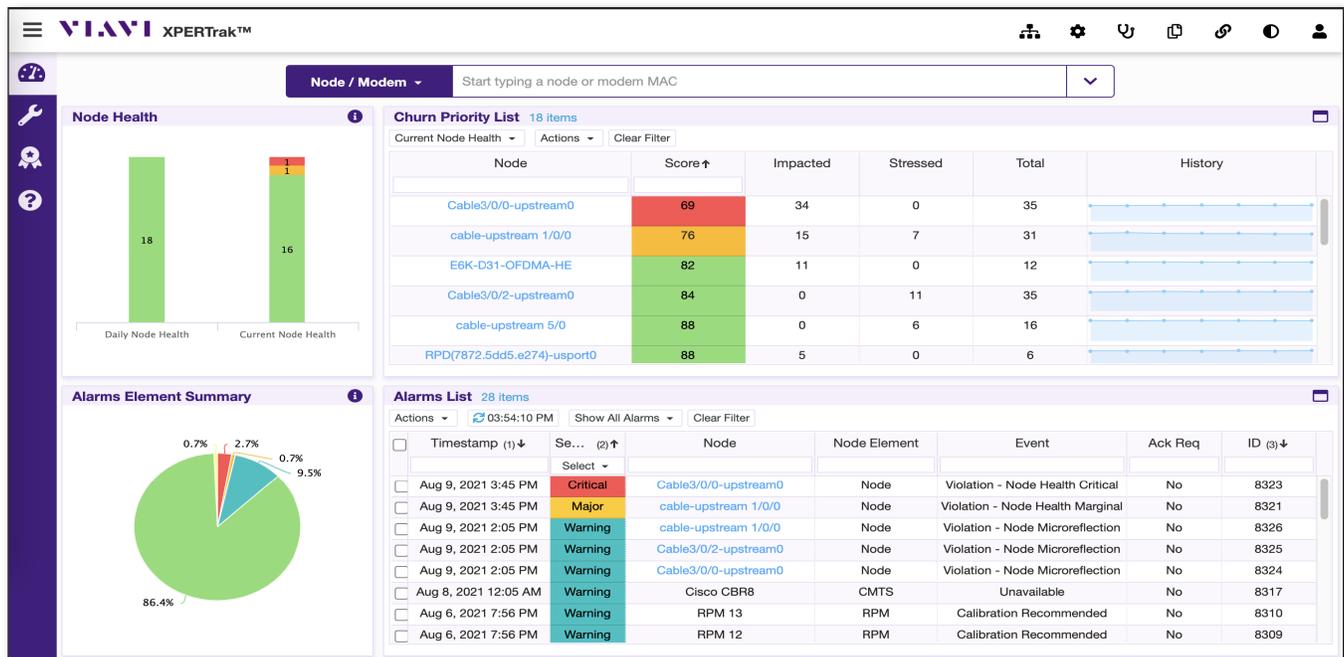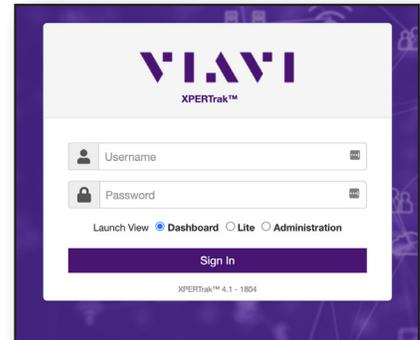
XPERTrak Main Dashboard

Configuring the system

For detailed information on how to configure and manage your system, see *Chapter 13: Configuration* in the *User's Guide*.

To get you started, on the top right side of the screen, select the **Configuration** ⚙ menu from the Main toolbar, as shown here.

Configuration

From the dropdown, choose *Administration*. The **Administration** screen will open in a new tab, showing the Dashboard.

Administration panel

On the left side of the screen is the **Administration Panel.** For more information and to set up, see the individual sections of the chapter.

- **Dashboard** – A visual summary of the alarms and basic information of the HCUs and CMTS

- **Alarms** – Display of all alarms and configuration

- **HCU** – Management of the HCU, RPM, ports, and HSM

- **CMTS** – Management of the CMTS, nodes, and modems

- **RCI** – Management of the RCI and sweep plan

- **OTU** – Management of the OTU and ports

- **Containers** – Management of all containers and meta tags

- **Sites** – Management of all hardware sites

- **Enterprise** – Management of regions and systems

- **Users** – Management of users, roles, and access

- **Settings** – Management of system settings

- **Information** – Basic information of the server, license, diagnostics, and triggers
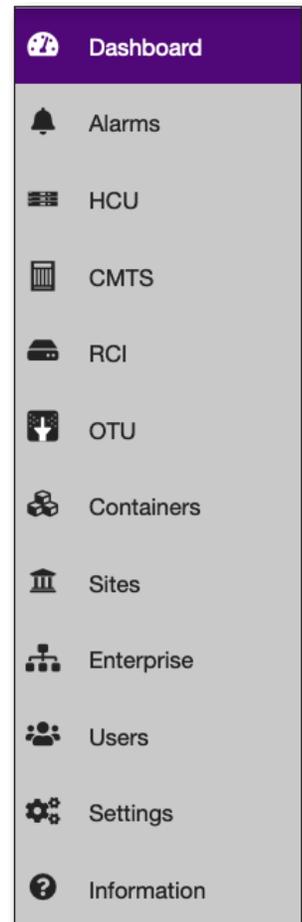
Licensing

Before you can set up or use any advanced features in XPERTrak (RCI, OTU, etc.), you may need to enter your licensing information.

Select **Information** and the **License Information tab** to get started.

See *Chapter 13: Configuration, Information* in the *User's Guide*.

Creating sites

Once you start configuring your XPERTrak system, one of the first things you'll want to do is create your site locations to differentiate them easily (North, South, Central, etc).

Select **Sites** to get started.

See *Chapter 13: Configuration, Sites* in the *User's Guide*.

Creating an enterprise

Next, you may want to set up an enterprise to manage configurations for the regions and systems inside the enterprise.

Select **Enterprise** to get started.

See *Chapter 13: Configuration, Enterprise* in the *User's Guide*.

Creating containers

Next you'll want to start building containers to put your network elements into (CMTSs, HCUs, HSMs, RPM cards, RPM ports, etc). Containers allow you to limit what users can access and what data is visible to them or their group.

Select **Containers** to get started.

See *Chapter 13: Configuration, Containers* in the *User's Guide*.

Adding a CMTS

Now that you have your sites and containers in place, you can add your CMTSs.

Select **CMTS** to get started.

See *Chapter 13: Configuration, CMTS* in the *User's Guide*.

Adding an HCU

Adding an HCU is a similar process to adding a CMTS.

Select **HCU** to get started.

See *Chapter 13: Configuration, Headend Controller Unit (HCU)* in the *User's Guide*.

Exporting system data

From the **Actions** dropdown on many of the Configuration sections, you can export the list or table of the device information to a CSV Excel file.

See *Chapter 13: Configuration* for each admin section in the *User's Guide*.

Upgrading firmware

Your XPERTrak server will periodically check for new firmware for any of the hardware. You should always make certain all of your PathTrak hardware has been updated with the latest firmware to ensure you have the latest fixes and patches, utilizing all of the most recent features and capabilities.

From the **Actions** dropdown in the **HCU** section, choose *Firmware Upgrade*.

See *Chapter 13: Configuration, Headend Controller Unit (HCU)* in the *User's Guide.*

Adding an RCI

Next you can add an RCI to configure remote PHY controllers and sweep plans.

Select **RCI** to get started.

See *Chapter 13: Configuration, RCI* in the *User's Guide*.

Adding an OTU

Next you can add an OTU to configure fiber monitoring and testing.

Select **OTU** to get started.

See *Chapter 13: Configuration, OTU* in the *User's Guide*.

Creating users and groups

Now that you have your entire system built in XPERTrak, you can start creating users, groups, and assign roles and access.

Select **Users** to get started.

See *Chapter 13: Configuration, Users* in the *User's Guide*. Creating users and groups

Editing properties

Select the edit button to the right of the element name (Node, HCU, RCI, OTU, etc.). Edit the information as needed, and click the **Save** button.

See *Chapter 13: Configuration* for each admin section in the *User's Guide*.

Editing monitoring plans

You can edit and copy monitoring plans through the **Ports** tab of the **HCU** section.

From the **Actions** dropdown in the **HCU** section, choose *Copy or Edit Monitoring Plan*.

See *Chapter 13: Configuration, Headend Controller Unit (HCU)* in the *User's Guide.*

Configuring alarms

You can configure alarms based on when certain events are triggered. Devices you can configure for alarms include: HCUs, RPMs, HSMs, ports, CMTSs, nodes, network elements (amplifiers, splitters, taps), RCIs, CMTS upstream ports, OTUs, or OTU ports.

Select **Alarms** and the **Alams Configuration tab** to get started.

See *Chapter 13: Configuration, Alarms* in the *User's Guide*.

Importing topology and street alarms views

You can import plant topology and street alarm data to get the full picture of the health of your network via API and CSV formats. These features require the corresponding licensing.

See *Chapter 14: Appendix, Topology import* in the *User's Guide*.

Configuring system settings

Finally, you'll want to customize the XPERTrak system settings, defaults, and advanced features, including measurement units, language, map overlays, events, alarms, and thresholds.

Select **Settings** to get started.

See *Chapter 13: Configuration, Settings* in the *User's Guide*.

Running reports

For detailed information on how to create reports, see *Chapter 12: Reports* in the *User's Guide*.

You can run reports in XPERTrak for detailed analysis, including node ranking and modem summaries. Only admins have access to the feature.

To get you started, on the top right side of the screen, select the **Reports** menu from the Main toolbar, as shown below.
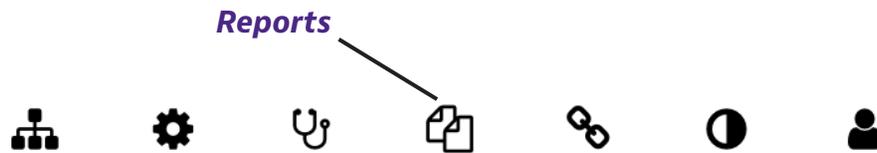
Reports

From the dropdown, choose *Reports*. The **Reports Dashboard** will open in a new tab.

You can also run pre-configured reports from here. See the *User's Guide* for more information.
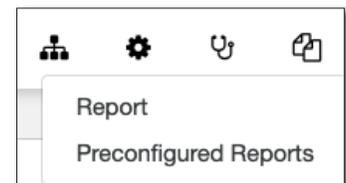
Select the **Generate Report** button on the right side to bring up the Report Type section.
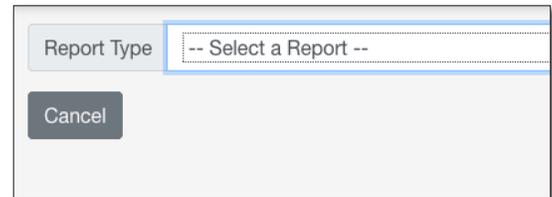
Additional information

For more detailed information, contact us at **CATVsupport@viavisolutions.com** for these additional documents.

User's Guide

Application Notes

Software Release notes   (including system requirements and OIDs)

API Developer's Guide

RCI Software Installation Guide

Backup and Restore Processes

Server Configuration Instructions

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