QORTEX DTC 2.3 Quick Start Card

QORTEX DTC™ 2.3 is a LiDAR-based solution that provides 3D perception and volumetric sensing. This system detects, tracks, and classifies (DTC) person and vehicle objects for use in security, smart cities and spaces applications. The QORTEX DTC 2.3 server interfaces with Quanergy LiDAR M-Series sensors, including all models of M8™ and MQ™-8 and generates a real-time list of tracked objects that is accessible through the QORTEX DTC API. The QORTEX DTC 2.3 client provides visualization and configuration of the QORTEX DTC server. Alternatively, use the QORTEX DTC server gRPC API to configure and control the QORTEX DTC server.

Requirements for Operation – Install all hardware on the same local Ethernet subnet, connecting via TCP/IP protocol!

- Install the QORTEX DTC 2.3 server on a computer with an Ubuntu® 20.04™ OS. The QORTEX DTC 2.3 server supports statically installed LiDAR sensors that are running at a configurable frame rate of 5-20 hertz. To save on network bandwidth select single return pulse and reduce the HFOV scan field. See your sensor User Guide.
- Install the QORTEX DTC 2.3 client on a computer with Microsoft Windows® 10 or Ubuntu 20.04 OS. We recommend installing the QORTEX DTC server and client on separate computers, though they can be on the same computer.
- For minimum specifications and other setup recommendations, see the *QORTEX DTC 2.3 User Guide*. For QORTEX DTC, Q-View guides at https://downloads.quanergy.com/. Email support@quanergy.com for sensor guides.

Complete Prerequisites for Sensors –

1. Understand, set up, and mount the LiDAR sensors according to your *sensor User Guide*.
2. Use Quanergy's Q-View™ tool to manage sensors, discover sensor IP addresses. See *Q-View User Guide*.

Connect Host Computers – Host the server and client software:

1. On the same network as the sensors, connect the server/client host computers to power, then boot Ubuntu/Windows.
2. Note the server IPv4 or IPv6 Address, listed in the menu bar's Connection Information window.

Install Server Software and Activate the Server License – License ID/Password from Quanergy support representative.

1. From https://downloads.quanergy.com/#qortex, agree to **Terms**. Click QORTEX 2.3 Server link to view readme file.
2. From the link listed in the `qortex_readme.txt` file, download the installer to the QORTEX DTC server host.
3. From a terminal on the host computer, run the commands.

Debian package `qortex-server_2.3.xx_amd64.deb`.

Existing installations only.

```
$ sudo systemctl stop qortex-server.service
$ sudo dpkg -r <qortex-server_old-version>
```

Install software.

```
$ cd ~/Downloads
$ sudo dpkg -i qortex-server_2.3.xx_amd64.deb
$ sudo systemctl daemon-reload
```

Activate license. Answer prompts. Reboot to activate new license. Verify # sensors, PTZ cameras, Rules, SubVehicle.

```
$ cd /opt/quanergy/qortex-server
$ ./Qortex-Server --license activate
$ sudo reboot
```

Docker image `qortex-server_2.3.xxx.tar.gz`.

Load and verify image on host.

```
$ docker load < qortex-server_2.3.xxx.tar.gz
$ docker images
```

Add `quanergy` user and set permissions for the user.

```
$ sudo adduser --system quanergy --group
$ sudo mkdir -p /home/quanergy/quanergy/qortex/location
$ sudo chown -R quanergy:quanergy /home/quanergy
```

Edit, add sensor IP addresses to settings.

```
$ cp settings.xml /home/quanergy/quanergy/qortex/location/
```

Activate license. Verify # sensors, PTZ cameras, Rules, SubVehicle.

```
$ docker run --rm --net=host -v
/home/quanergy/quanergy/qortex:/home/quanergy/quanergy/qorte
x -it qortex-server:2.3.xxx --license activate <LICENSE_ID>
<PASSWORD>
```

Run container from image.

```
$ docker run --restart=always --net=host -v
/home/quanergy/quanergy/qortex:/home/quanergy/quanergy/qorte
x -dit --name qortex-server qortex-server:2.3.xxx
```

Install Client Software – From the machine that will host the client.

Download the installer from https://downloads.quanergy.com/ - qortex, agree to **Terms**. Select operating system.

Windows: Click **QORTEX 2.3 Client Windows**. Complete the download. Open the Downloads folder and double-click the `qortex-client_2.3.xxx_win64.exe`. Accept defaults and click **Finish**.

Ubuntu: Click **QORTEX 2.3 Client Linux.** Follow the steps in the `qortex_readme.txt`. From a terminal on your host computer, run the command:

```
$ sudo dpkg -i qortex-client_2.3.xxx_amd64.deb
```

Step 1. Start QORTEX DTC – Both the server and the client must be in operation to visualize live or recorded data.

1. On the server host machine: from a terminal, run the command: `$ sudo systemctl start qortex-server.service`
2. On the client host machine:
   - Windows: double-click the QORTEX DTC client icon.
   - Ubuntu: from a terminal, run: `/opt/quanergy/qortex-client/Qortex-Client`

Step 2. Select a QORTEX DTC Server – You can add a list of QORTEX DTC servers, but the client can connect to and receive data from only one at a time.

1. In the client, click **No Server Selected** button > **Add Server** panel > **Add New Server** button.
2. Enter the Server details: **Server Name** (nickname), **Server IP address** (of Qortex DTC Server), then click **OK**.

Step 3. Enter Configuration Mode – The Configuration panel provides tabs: Server, Zones, Sensor, PTZ Camera, Rules.

1. Open the Configuration panel. Click the **Settings** button and click **CONFIRM**.
2. In the client, disconnect the server from the sensors. Click the **Connected** button to toggle to **Disconnected** mode.

[OPTIONAL] Step 4. First Time Qortex DTC Client Login – Create an Admin user.

1. In **Configuration** mode panel, click **CONFIRM**.
2. In **Server** tab > **Security** panel, toggle **Security Mode ON**.
3. In **Sign into your account** panel, enter `License ID` and `License password`.
4. In **Setup Admin Account** panel, enter `Admin` credentials (username, password), and click **Setup Account**.
5. Optionally, create additional users. **Server** tab **> Users > Add User**. Set **Username**, **Password**, and **Role**. Click **Add User**.

[OPTIONAL] Step 5. Setup Security – Require credentials to access configuration mode.

1. **Configuration** mode > **Sever** tab > **Security Configuration** tab.
2. Expand **Security Login**. Click toggle **ON**.
3. E**nter** `Admin` user credentials.
4. Click **SET SECURED**.

Step 6. Add a Sensor – The sensor defines the location area that the server monitors.

1. **Configuration** mode > **Server** tab > **Single**. See *Qortex DTC 2.3 User Guide* for Multiple sensors.
2. Complete the form: **Sensor IP Address**, **Sensor Name**, Location **Template**. Click **OK**.

Step 7. Add/Edit a Zone/Counter Line – Use Event zones for monitoring, Exclusion zones to ignore noise, Inclusion zones for non-rule monitoring.

1. **Configuration** mode > **Zones/Lines** tab > **Event, Exclusion, Inclusion, or Counter Line** panel.
2. Click **Add** (+). In Visualizer, click points to complete the polygon.
3. Edit zone mode: Left click in the zone or, in **Zone** panel click edit icon. Move vertex point: double right click point, move, left click. Move zone: left click and drag zone. Save/Exit Edit: double left-click. Cancel/Exit: Escape key.
4. Click **Zone/Line** toggle to ON.

Step 8. Add Rules – Track objects in event zones: PTZ Camera, Network Action, Recording and Global>PTZ Time Switching. **Create zones before rules.**

1. **Configuration** mode > **Rules** tab > **ADD** > **Rule**.
2. Select **Rule Type**. Enter field data. Add **Rule Schedule**. Click **CONFIRM**. Rule Type fields vary. Track Type: Any, Human, Vehicle, Human and Vehicle, Unknown; Entry/Exit: HTTP command example: `http://<webserver-ip>:3000/$TRACK_ID-ENTRY;.`
3. Select **PTZ Camera > Time Switching**. Set number of objects to monitor. Set frequency to switch objects (in seconds).

Add PTZ Camera – PTZ Cameras must support OnVIF Profile S communication protocol. See User Guide for current list of supported cameras.

1. **Configuration** mode > **PTZ** tab. Click **ADD CAMERA**. Enter required PTZ Camera details: **IP address** (PTZ camera), **credentials** (PTZ camera feed/control), **Name** (reference), and **Model** (camera_name). Click **Next**.
2. Calibrate PTZ Camera. Select **PTZ camera name > Calibration > Calibrate Camera**. Click the **Start** button. Follow the steps in the Calibration wizard.
3. Add PTZ Camera Field of View (FOV). Select **PTZ** Camera > **PTZ Camera name tab** > **Field of View**: CIRCLE (arc) or POLYGON. Follow the prompted tips. Click **APPLY ALL**.
4. Set PTZ Camera tracked objects option – Lock PTZ Camera.
   - **Automatic tracking**: Create Event zones. Create PTZ camera rules with enter/exit zone triggers.
   - **Manual tracking**: Right-click Camera icon in Visualizer and select an object track ID to follow.

View Live Data – LIVE data is visualized per the server configuration listed in the settings.xml file.

1. **Monitor** mode > Connect server to sensors. In appx. 30-seconds collected data is displayed in the Visualizer.
2. Select **LIVE** from **Data Selector** menu.
3. Edit `settings.xml` file: **Configuration** mode > **Sensor** > **Settings Basic** or **Advanced**.

View Recorded Data – Saved data, see QLog files. Record new data, see *Qortex DTC 2.3 User Guide*.

1. **Configuration** mode > **PLAYBACK** from **Data Selector** menu.
2. Click **Select Recording**. Select a recording from the menu.

	3. Click the recording controls for play, pause, replay, and download.
Terminate Processes – Click the client Close  button. You do not need to terminate the server daemon service.	

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