VNC Automotive
Connectivity that moves

Mobile Data Terminal (MDT) Control Guide

Cobalt Cube®

Contents

1 Introduction **2**

2 Additional hardware requirements **2**

3 Connectivity instructions (Router) **2**

4 Connectivity instructions (Direct DHCP) **2**

5 Connectivity instructions (Direct Manual) **2**
5.1 Assign static IP address for Ethernet adapter Cobalt Cube 2
5.2 Assign static IP address for Ethernet adapter Windows PC 3

6 Working with the MDT application **4**

7 MDT configuration **5**
7.1 Configuration Options 5
7.2 Navigation 7
7.3 Configuration via file 8
7.4 Connection authentication 9

1 Introduction

The MDT application is designed to connect with and control software running on a separate PC, laptop or tablet running Microsoft Windows. Different Cobalt Cube users in different first response scenarios can access essential applications such as Automatic Number Plate (Licence Plate) Recognition System (ANPR) software, or secure messaging and command control systems.

The Windows machine needs a compatible Cobalt Link+ server and to be on the same IP network.

Please refer to the Getting Started Guide for the Cobalt Link+ server for Windows for more information on how to set up Cobalt Link+ in the Windows machine.

Note: the MDT application can be renamed as appropriate to better match the function of the controlled Windows PC, which can make finding the right application to launch from the main list even easier for the user when in-vehicle. See “Changing the display name for an application” in the Getting Started Guide.

2 Additional hardware requirements

Apart from the Cobalt Cube, the following hardware is required:

- Windows PC running a Cobalt Link+ server.
- Router (wired or wireless, not mandatory).
- 2x Ethernet cables (only one is mandatory).

3 Connectivity instructions (Router)

There must be a network to which both the Windows PC and the Cobalt Cube are connected. The Cobalt Cube should be connected using an Ethernet cable (from its ETHERNET port) to the router; the Windows PC can be connected over Ethernet or Wi-Fi.

4 Connectivity instructions (Direct DHCP)

The Cobalt Cube includes a built in DHCP server which can automatically manage the IP addresses in your vehicle network when no router is available.

To make use of this feature you will need to enable the DHCP server in the Cobalt Cube admin settings and connect the Cobalt Cube to the Windows machine either directly or via a network switch using Ethernet.

For full details please see the **DHCP Server** document.

5 Connectivity instructions (Direct Manual)

It is possible to connect the Cobalt Cube to the Windows PC directly without the need for a router if required. In order to facilitate this, both the Cobalt Cube and the Windows PC will require a static IP address in the same range. E.g. 192.168.1.10 for the Cobalt Cube and 192.168.1.20 for the Windows PC.

5.1 Assign static IP address for Ethernet adapter Cobalt Cube

Note: Ethernet settings can be accessed from the Cobalt Cube admin settings. Please see the instructions under **Accessing Cobalt Cube admin settings** in the **Getting Started Guide**.

Once in Cobalt Cube admin settings, scroll down to Advanced Settings, and select

Ethernet settings

Then select

Ethernet Ip mode > static

You will then be prompted to enter your desired network settings.

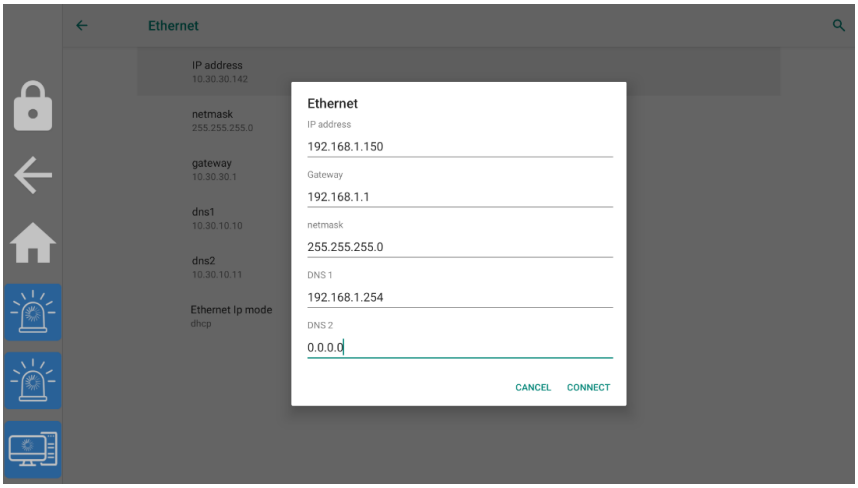

Figure 1: Cobalt Cube static Ethernet settings

When setting a static IP address on the Cobalt Cube, the Android system populates the entries with an example in grey text. These values are for guidance only and need to be re-entered manually, at which point they will show up as black text, as shown in Figure 1.

The “Connect” button will stay greyed out until each of the required entries has been entered.

5.2 Assign static IP address for Ethernet adapter Windows PC

From the desktop navigate to:

Settings > Network & Internet > Change adapter options

Right-click on the active Ethernet Adapter and select:

Properties > Internet Protocol Version 4 (TCP/IP) > Properties > Use the following IP address

You may then enter the desired network settings.

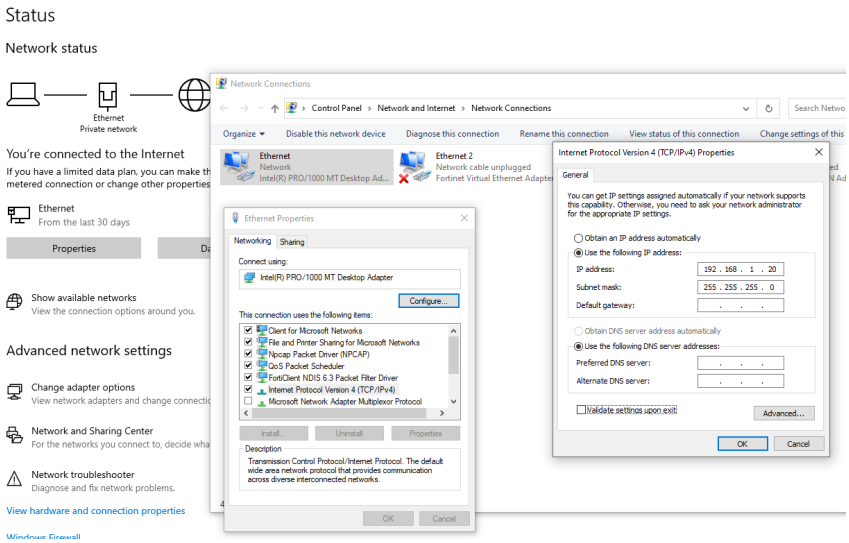

Figure 2: Windows PC static Ethernet settings

6 Working with the MDT application

After launching the application from the Cobalt Cube launcher by tapping the “MDT” icon, you will be presented with the following screen, and a connection will start automatically:

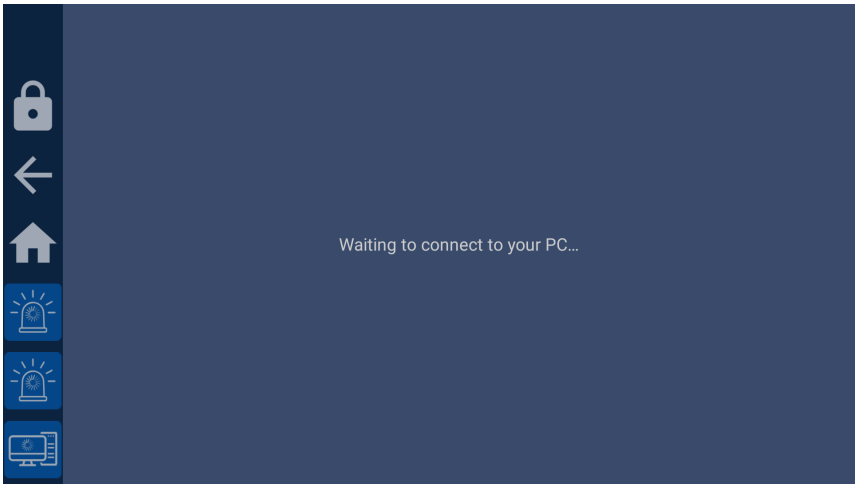

Figure 3: MDT Control screen

Once the connection is started, the Windows machine screen will be displayed on the Cobalt Cube, as shown in these examples:

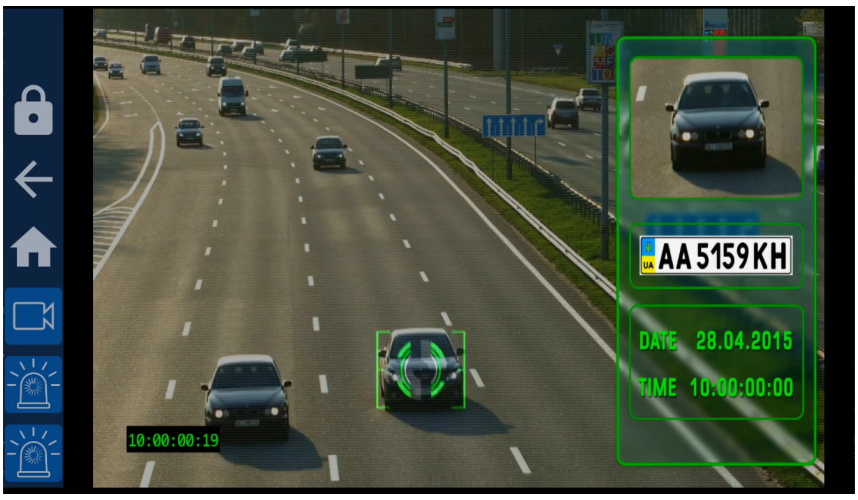

Figure 4: Example of projected MDT Control software

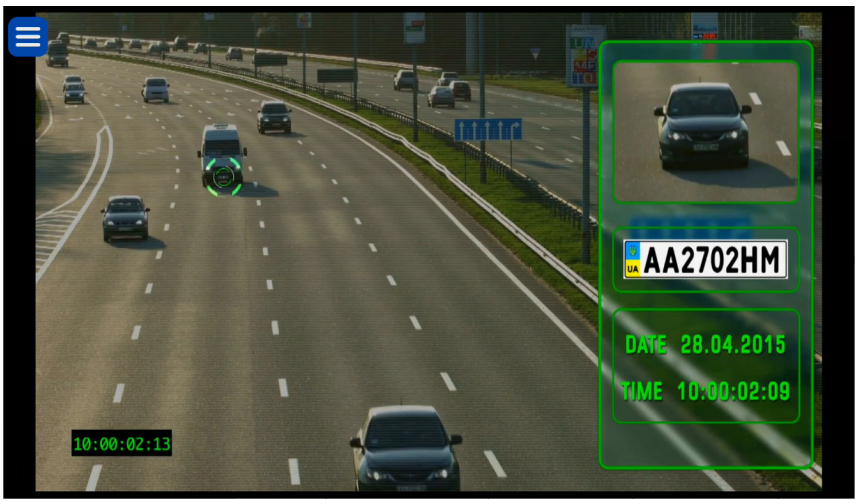

Figure 5: Example of projected MDT Control software without the navigation bar

7 MDT configuration

The MDT application supports several configuration options. These can be set via the configuration interface (see Figure 6) or via a file located at:

`/vnc/anprcontrol/config.properties`

Configuration options in this file are formatted using <name>=<value> syntax and are separated by new lines. E.g.:

```
scalingFactor=1
hideMenuBackButton=true
```

7.1 Configuration Options

The full list of supported options is:

Name	Possible Values	Description

commandstring	Any valid VNC Automotive command string.
	
	For connecting to a listening server:
	
	`vnccmd:v=1;t=C;a=<server-ip>;p=<server-port>`
	
	For listening for an incoming connection:
	
	`vnccmd:v=1;t=L;p=<listening-port>`
		This value may be used to override the default behaviour of the MDT viewer and direct it to connect to a specific server or to listen for incoming connections.

hideMenuBackButton	"true" or "false"	If true, the floating back menu button will not be displayed in the application. **Note:** This option is only available if the navigation bar is disabled, otherwise it will have no effect. For details on manipulating the navigation bar see the customisation section in the Getting Started Guide. Defaults to false.
scalingFactor	Decimal values ≥ 1.0	Controls the scaling factor applied to the captured desktop before it is transmitted by the Cobalt Link+ Server. The scaling factor can be useful to save network bandwidth when using a smaller screen where a high resolution is not required. **Note:** captured desktops can only be downscaled at this time. Defaults to 1.0.
encoding	Must be one of: RAW JPEG TRLE	Selects the encoding used by the Cobalt Link+ Server. Defaults to JPEG

fitToScreen	“true” or “false”	Controls if the Cobalt Cube will attempt to stretch the frame data to fill the available display space. Defaults to true.
setServerDisplayResize	“true” or “false”	If true, the Windows desktop aspect ratio is changed to better match the head unit, to provide higher image quality. Defaults to false.
fileTransferEnabled	“true” or “false”	If true, the Cobalt Link+ server will be able to transfer a system update file to the Cobalt Cube. Defaults to false.
fileTransferRateLimitEnabled	“true” or “false”	If true, the System Update via Cobalt Link+ will be rate-limited. Without rate-limiting, an update file should be transferred under five minutes when using JPEG encoding. This can lower the frame rate by a few frames while the transfer is ongoing. If this is a problem, enabling rate limiting will prevent this, but the transfer can take up to an hour and a half. **Note:** The transfer will take significantly longer using TRLE or RAW encodings regardless of rate-limiting. Defaults to true.

7.2 Navigation

Note: It is possible through the combination of turning off the navigation bar in the Cobalt Cube settings and setting “hideMenuBackButton” to true to have no button to exit MDT if it is actively connected. This can be desirable to maximise the amount of screen space available for the MDT application and to prevent accidental clicks outside the app.

However, to exit the app, the connection to the Cobalt Link+ Windows Server must be closed. Once the connection has ended the application can then be exited from the discovery screen via the back button in the top bar.

These settings can be changed using the configuration tool that can be accessed through the Cobalt Cube admin settings menu. For details on how to do this, see “Application specific settings” in the Getting Started Guide.

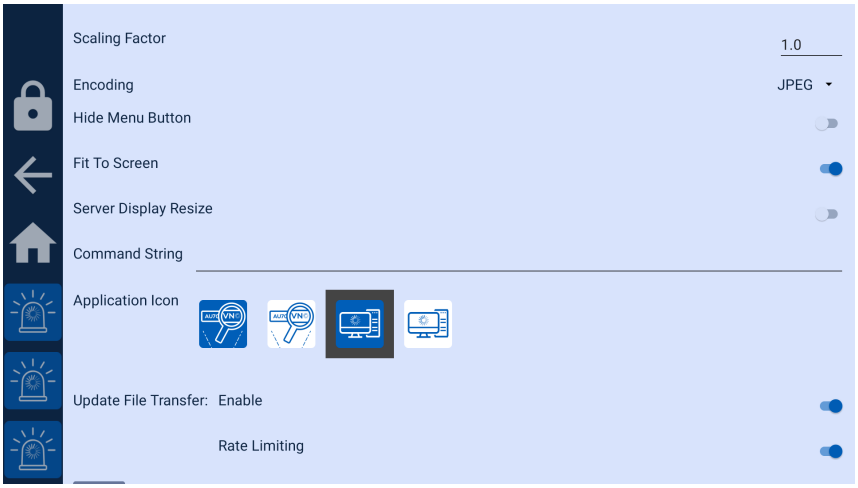

Figure 6: MDT settings

7.3 Configuration via file

To create the configuration file manually, you will require the use of another computer. On that system create the file config.properties and add the desired options.

Copy the file config.properties to a USB stick and transfer that USB memory stick to the Cobalt Cube.

On the Cobalt Cube, select the “File Explorer” option in the “Select Apps” menu (See “Setting up the home screen” in the Getting Started Guide). This will add the file browser application to the home screen.

Note: When you have finished, remember to hide the file browser application if it is not suitable for end users.

Open the Files application and select the three dots in the top right corner to access the menu. Choose “Show internal storage” from the options.

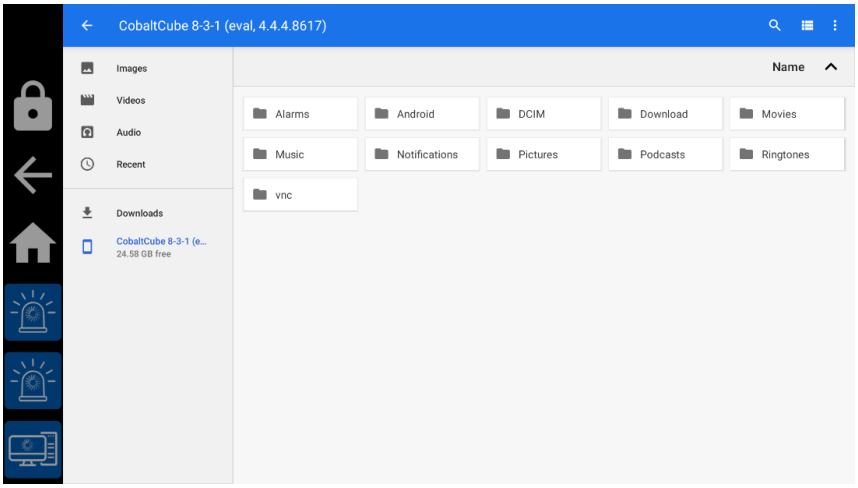

Figure 7: Files app showing internal storage and memory stick

Using the three-dot menu, create the directory structure `/vnc/anprcontrol` if it doesn't exist.

Copy the **anpr.properties** file from the memory stick to **/vnc/anprcontrol**. It is important that there is only a single file in this directory to avoid ambiguity over which configuration file MDT is using.

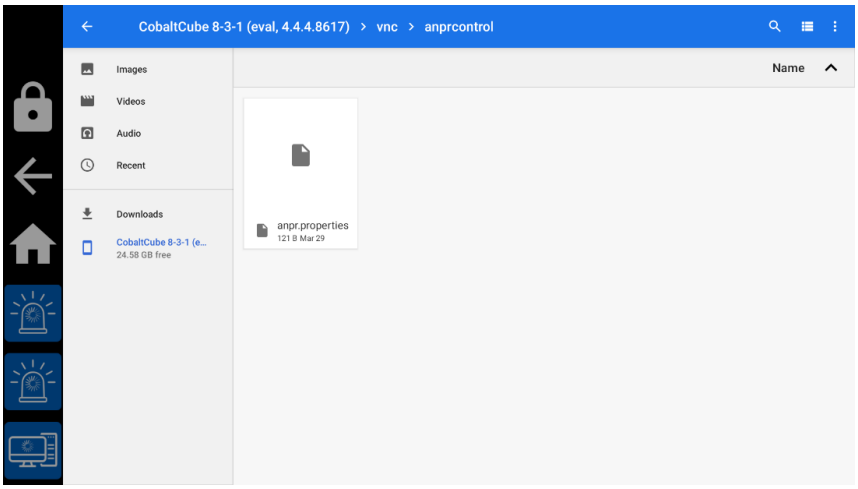

Figure 8: Files app showing the MDT configuration file

Remove the memory stick and return to the home screen.

7.4 Connection authentication

For enhanced security, authenticated connections can be enabled by specifying credentials in the activation code (see the **Product activation** in the **Cobalt Cube Getting Started Guide**). This will require those same credentials to be entered in the Cobalt Link+ Windows Server application during installation (see **Destination and startup options** in the **Cobalt Link+ Server for Windows Getting Started Guide**). This is an optional feature - however, leveraging authentication enhances the overall security of sessions. For those seeking password options, please contact your VNC Automotive technical representative who will be able to generate you the required activation code for your devices.

Let’s discuss your project

As industry pioneers, we will help you cut through the complexity and deliver ingenious connectivity technology for the vehicles of tomorrow.

Get in contact via:

www.vncautomotive.com
technicalsupport@vncautomotive.com