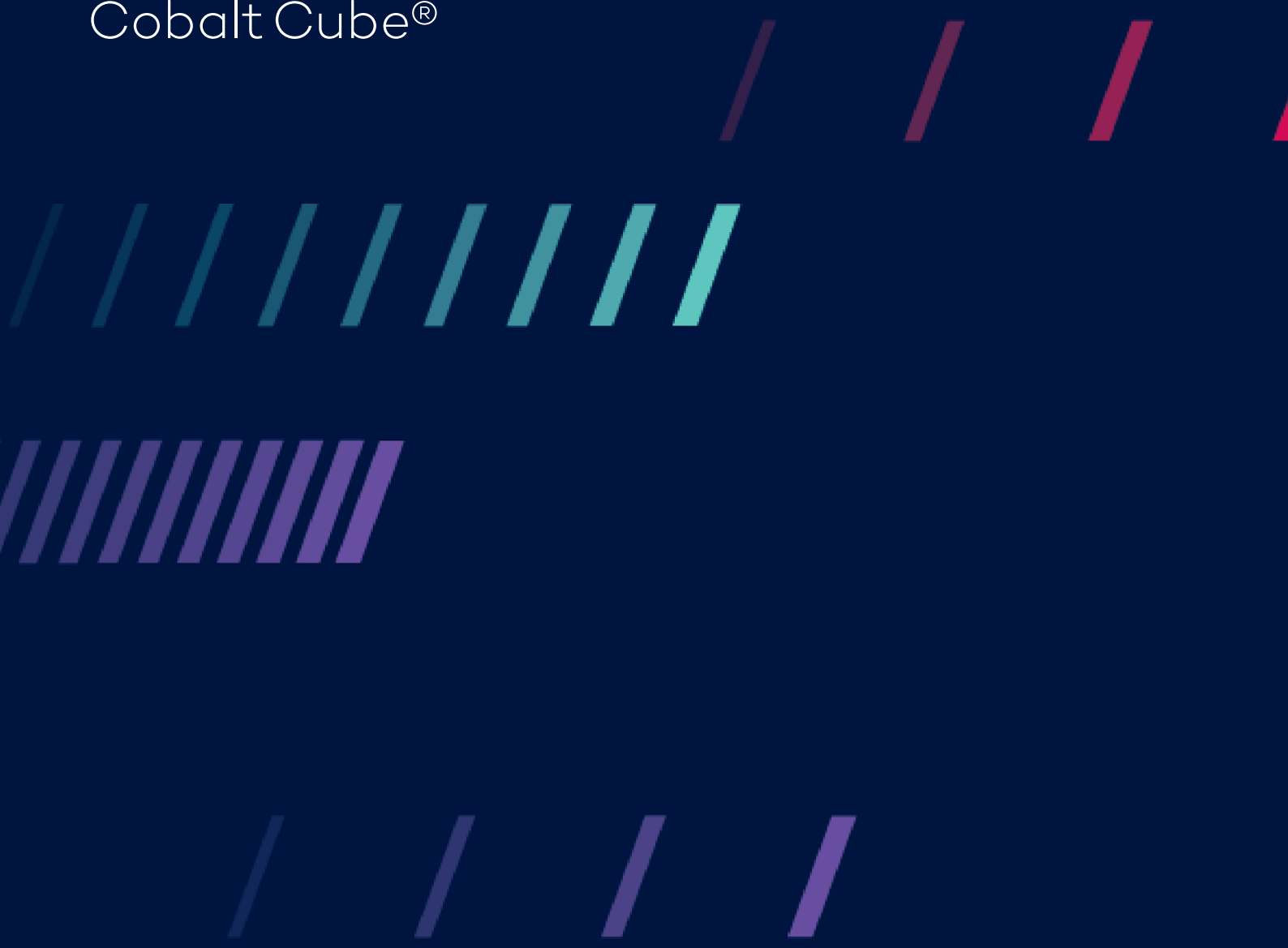


System Update Guide

Cobalt Cube®



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1 Introduction

This document lays out the strategy of keeping the Cobalt Cube® up to date with the latest security, performance and functionality updates during the lifetime of the device.

The term “update file” will be used throughout this document. This refers to the file provided by VNC Automotive that will update the system software on a Cobalt Cube. These files will have a `.ccu` extension.

We constantly test the Cobalt Cube with various vehicles and use customer feedback to ensure our software continues to function appropriately and safely. Furthermore, we regularly improve usability, add new functionality and carry out performance optimisations. For these reasons, keeping the Cobalt Cube System up to date with the latest release is vital.

2 Frequency of Software Updates

Typically, you should expect system updates to be made available from VNC Automotive at least 3 times a year. The exact timing can vary but is usually evenly spread every 3-4 months.



Note: The date at which an update is made available to your specific units may depend on your Cobalt Cube supplier, if that's not VNC Automotive directly.

As modern cars get software updates over the air regularly, we need to ensure the Cobalt Cube's software is up to date and in line with the latest updates by the car manufacturer.

For this reason, the Cobalt Cube needs to be updated on average three times a year or every four months to guarantee its optimal and secure performance.

VNC Automotive cannot guarantee the correct working order of the Cobalt Cube if regular updates are not installed.

3 Software Update Strategies

Once a new system update is released, several strategies exist to apply it on the Cobalt Cube installed in a vehicle. VNC Automotive is committed to making this process as streamlined and secure as possible.

During bootup, the update service will detect a valid system update package on the file system.

Three potential approaches are offered to keep the device up to date:

1. Software update via a USB stick when having physical access to the Cobalt Cube. See [section 6](#) for details.
2. Software update via an in-vehicle computer connected over Ethernet to the Cobalt Cube. The computer receives the update package over an internet connection and transfers it to the Cobalt Cube via a Cobalt Link+ connection. See [section 7](#) for details.
3. Software update via a direct internet connection to the Cobalt Cube. The Cobalt Cube receives an update directly from the OTA System Update Service via an internet connection. See [section 8](#) for details.

4 Update Files

4.1 File Name

System update files will have a **.ccu** file extension and must no more than 85 characters in length excluding the extension. Make sure file extensions are visible in the file browser before checking either of these cases. For most cases you can use the update file you have received from your VNC Automotive technical representative without any modifications to the name or extension.

4.2 File Security

System update files make use of several security mechanisms designed to ensure that they are genuine and have not been tampered with in transmission.

Validation checks are performed by the Cobalt Cube when an update file is found on the file system before installation is attempted. Should these fail, the user will be alerted.

4.3 Remote file security

For update files transmitted via the OTA System Update Service, security checks are performed to authenticate the remote server and the update file before the file is transferred to the Cobalt Cube.

5 Automatic System Update Install option

The Automatic System Update Install feature is intended to minimise or eliminate the requirement for user interaction with the update process. This feature is enabled from the Cobalt Cube admin settings menu (see [Figure 1](#)).



Note: This feature is on by default.

The effect of this setting is different depending on the way the update is delivered to the Cobalt Cube:

Update Type	State	Behaviour
USB	On	If only one update file is present then the update will start automatically as soon as the USB stick is detected by the Cobalt Cube (see Figure 4). If multiple files are found the user will be prompted to select which update file to use (see Figure 6).
USB	Off	The user will be prompted to start the update process manually(see Figure 7).
REMOTE	On	The user will be prompted with a countdown dialog when the update file is detected (see Figure 2). This allows a user the opportunity to defer the update if the Cobalt Cube is in active use. If the dialog is not dismissed before the countdown completes the update will start automatically.
REMOTE	Off	The user will be prompted to start the update process manually(see Figure 7).



Note: In the above table "REMOTE" refers to an update delivered via the VNC Automotive Update Service or via a Cobalt Link+ connection.

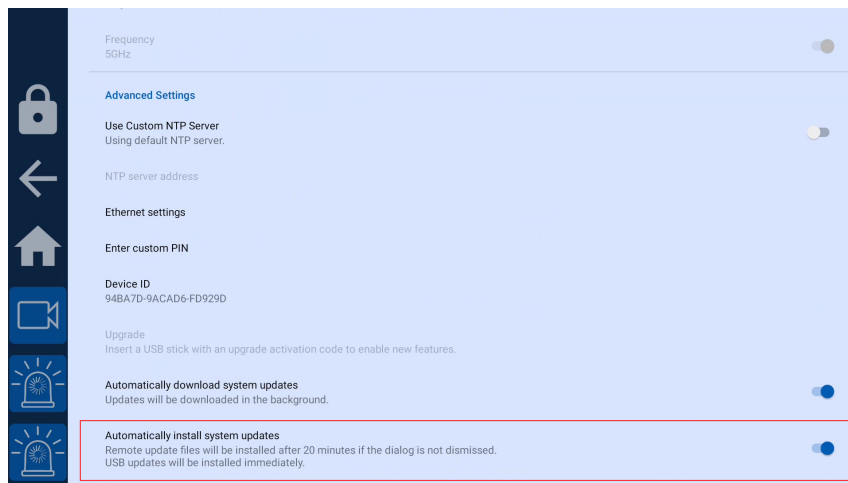


Figure 1: Automatic update setting

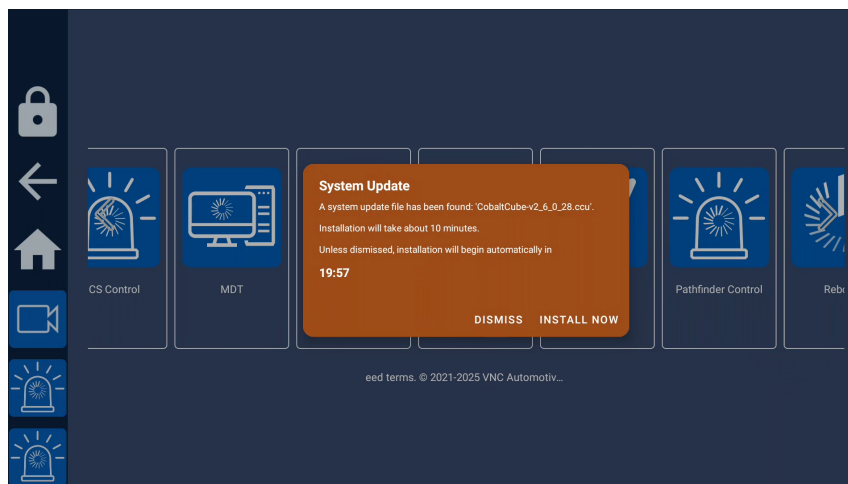


Figure 2: Automatic update countdown prompt

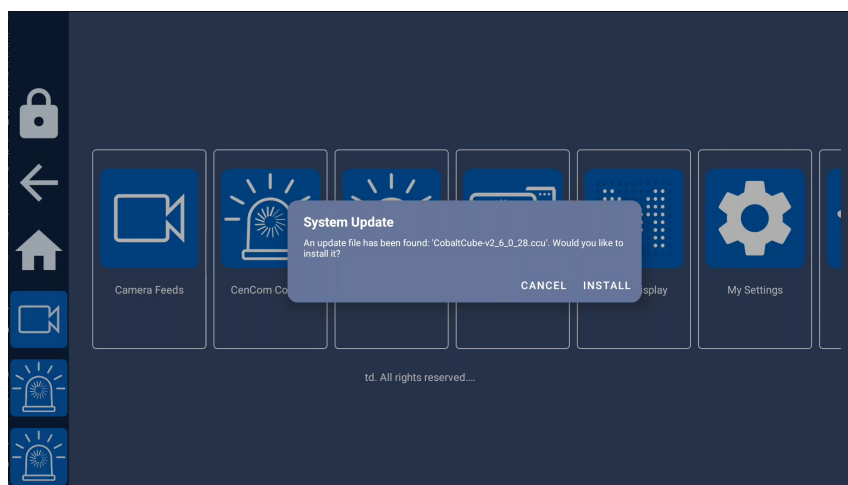


Figure 3: Manual install prompt

6 Updating the System via USB

To apply a system update via USB you will need a USB stick and an update file provided by VNC Automotive.



Note: While it is not essential for the update process, if you experience any issues during the update process we recommend a HDMI monitor is connected to the Cobalt Cube to allow you to monitor the progress of the update. While the update is in progress there will be nothing displayed on the vehicle screen.



Warning: Take care not to interrupt the power while the Cobalt Cube is being updated.

6.1 Copy Update

To make the update process more robust in the event of power being lost or the USB stick being removed prematurely the update file will be automatically copied to internal storage prior to the update being started, see [Figure 4](#).

With this feature it is safe to remove the USB stick once the Cobalt Cube reboots to apply the update and is no longer visible on the vehicle screen.

This allows you to update multiple Cobalt Cubes in parallel with a single USB stick.



Note: Copy Update is enabled on Cobalt Cubes with V2.5.2.42 or later already installed. Older devices will install directly from the USB stick.

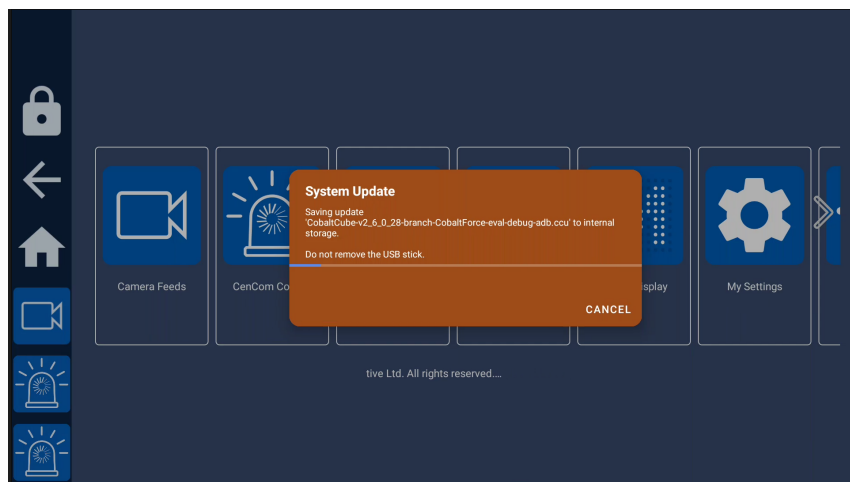


Figure 4: Copy dialog

In some cases it will not be possible to save the update file to internal storage due to insufficient space being available. In these cases you will see an error dialog as in [Figure 5](#). In this case you will need to clear some space on the Cobalt Cube internal storage before you will be able to apply the update.

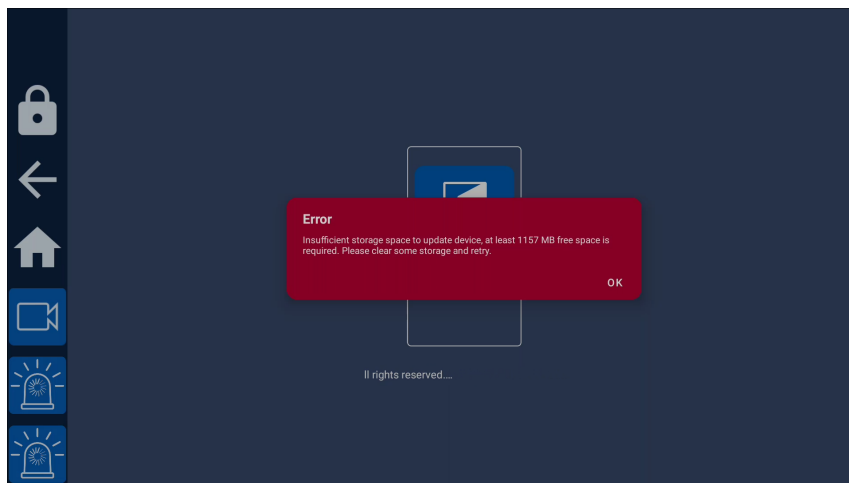


Figure 5: Not enough space warning

6.2 Applying the Update

The exact steps involved will depend on the Automatic Update setting (see [section 5](#)).

Follow these steps to apply the update:

1. Copy the update file into the root directory of the USB stick.
2. Insert the USB stick into the Cobalt Cube HOST port.
3. After a few seconds the update will either start automatically or a dialog will pop up, notifying that an update has been found on the USB stick (see [Figure 7](#) and [section 5](#)). If more than one update file is found you will be asked to select which you want to install (see [Figure 6](#)). If no valid updates are found but the USB stick contains update files you will see a dialog pop up notifying why none of the updates can be installed (see [Figure 8](#)).
4. The Cobalt Cube will install the update, and automatically reboot in the process. This may take a few minutes - do not power off the Cobalt Cube until the process is completed. If installing directly from the USB stick (see [Figure 5](#)) do not remove this from the Cobalt Cube.



Note: If the update process appears to be stuck on a black screen, press the physical reboot button on the Cobalt Cube. The button can be found on the same side as the HDMI port.

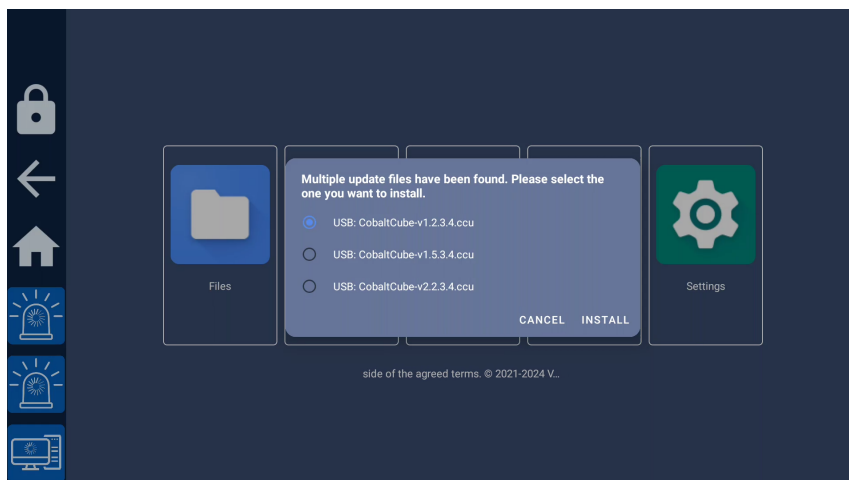


Figure 6: Multiple update dialog

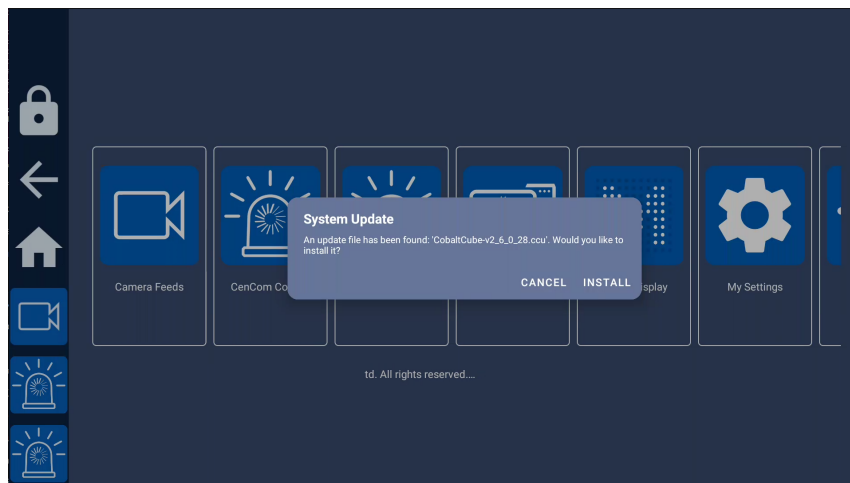


Figure 7: Update dialog

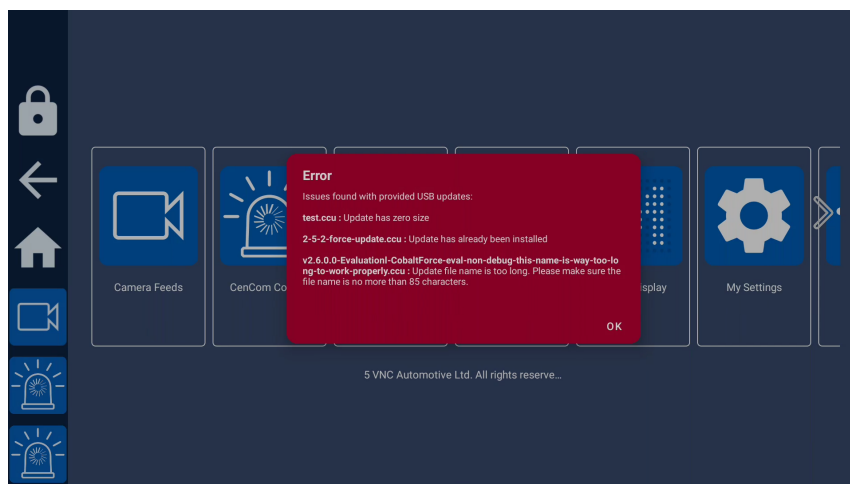


Figure 8: Invalid updates dialog

The Cobalt Cube will automatically display a dialog notifying of the successful update after it has been rebooted. If installing directly from the USB stick (see [Figure 5](#)) the user will be prompted to say when it is safe to remove the USB stick (see [Figure 9](#)).

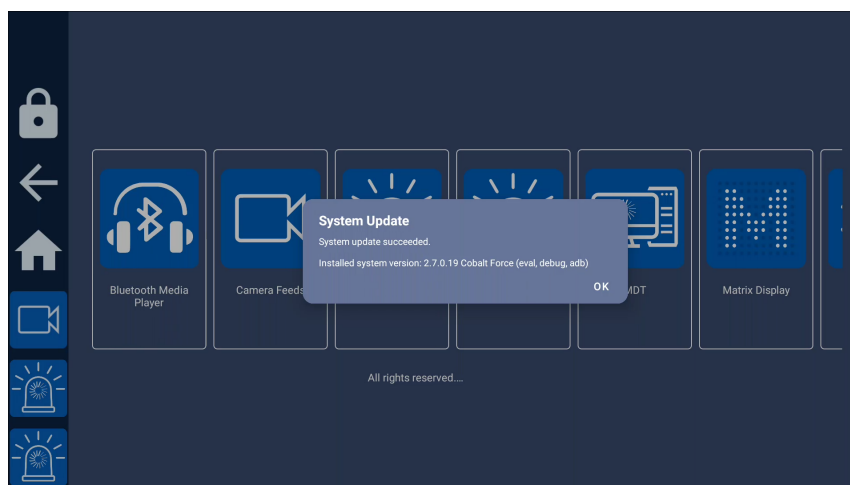


Figure 9: "Update successful" dialog

7 System Update via Cobalt Link+ on Windows PC

7.1 Introduction

The MDT application can be used to transfer and install the Android system update file while connected to a Microsoft Windows PC.

The Cobalt Link+ Server can be configured to search for an update file in a specific directory. On discovery of a new update file, the Cobalt Link+ Server will copy the file to the Cobalt Cube. On reboot the Cobalt Cube will then offer to prepare the update for installation.

7.2 Setting up the Cobalt Link+ Server

7.2.1 Update Directory Path

The Cobalt Link+ Server will look in a specified directory for a suitable update file. This directory is specified as a command line argument. The following argument is used (replacing with the desired update directory path):

```
-u "C:\Directory Path"
```



Note: quotes are required as the directory path is likely to contain spaces.

For further details please see the **Configuration options** section in the **Cobalt Link+ Server for Windows Getting Started Guide**.

If this argument is not given or an incorrect directory path is provided, the Cobalt Link+ Server will continue to function without the Automatic System Update functionality.

7.2.2 Post File Transfer Options

A "manual start argument" can also be used to define what will happen to the update file on the Microsoft Windows PC after a successful file transfer to the Cobalt Cube. The default behaviour is to do nothing and leave the update file in place.

To do nothing after a successful file transfer, use the following argument:

```
-p donothing
```

To delete the file after a successful file transfer, use the following argument:

```
-p delete
```

To move the file after a successful file transfer, use the following argument:

```
-p move "C:\Directory Path"
```



Note: quotes are required as the directory path is likely to contain spaces.

Further details of how to configure the Cobalt Link+ Server can be found in the **Server Configuration** section of the **Getting Started Guide for the Cobalt Link+ Server for Windows**.

7.3 Update File Staging

In preparation for transferring the update file to the Cobalt Cube, copy or move it to the directory path specified above. When the next Cobalt Link+ session to a Cobalt Cube is successfully started, the file transfer process will begin. This file transfer process includes a check to ensure only new update files are transferred. Provided the update file is a genuine update to the Cobalt Cube system the file transfer will begin.

If the Cobalt Link+ session is interrupted during the file transfer, the Cobalt Link+ Server will attempt to continue when reconnected. If this is not possible, the file transfer will resend the entire file.

Once the update file has been transferred, the Cobalt Link+ Server will do nothing to the file on the Windows PC unless told otherwise. It will not attempt to resend the file, provided that it has been successfully transferred to the Cobalt Cube. It will not attempt to resend the file once the Cobalt Cube has been updated.

7.4 Update File Preparation



Note: The exact sequence will depend on the Automatic Update setting (see section 5).

Once the update file has been transferred, and the Cobalt Cube has been rebooted the Update File found dialog prompt will appear (see Figure 7) or the countdown dialog will be shown (see Figure 1). In both cases, pressing “INSTALL NOW” will trigger the system update process to start immediately and this Cobalt Update dialog will appear (see Figure 10). The system will then update and reboot, which takes about ten minutes.

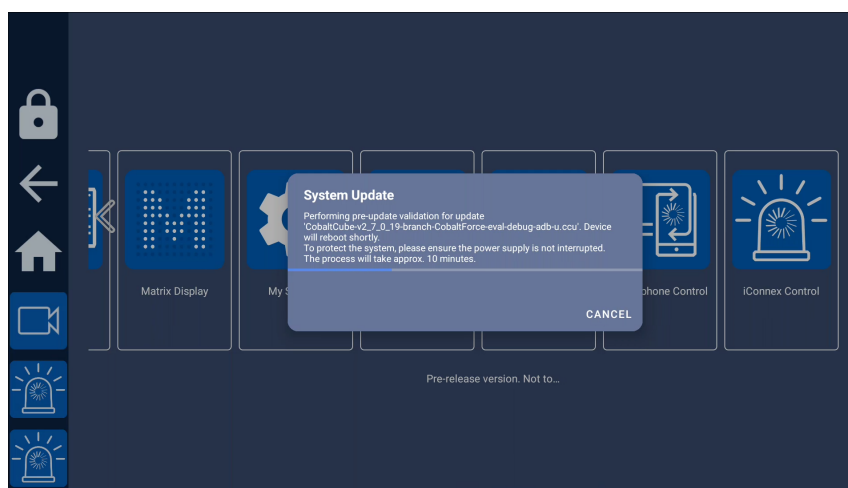


Figure 10: System updating dialog

7.5 Setting up the Cobalt Cube

The MDT settings menu contains two options for the System Update via Cobalt Link+ process (see Figure 11). The “Enable” option will tell the Cobalt Cube to accept (or reject) any update files offered by the Cobalt Link+ Server (note that checks will always be made to ensure the file is a new update file). The “Rate Limiting” option will transfer the file slowly in the background so as to not interfere with the user experience. The file will take more than an hour to transfer. If this option is disabled the file will be transferred as quickly as possible. The file would normally take a few minutes to transfer (depending on network conditions).

These options can also be configured via a file located at:

`/vnc/anprcontrol/config.properties`

These options are defined using <name>=<value> syntax as follows:

```
fileTransferEnabled=true
fileTransferRateLimitEnabled=false
```

A more general overview of MDT settings can be found in the **MDT configuration** section of the **Cobalt Cube Getting Started Guide**.

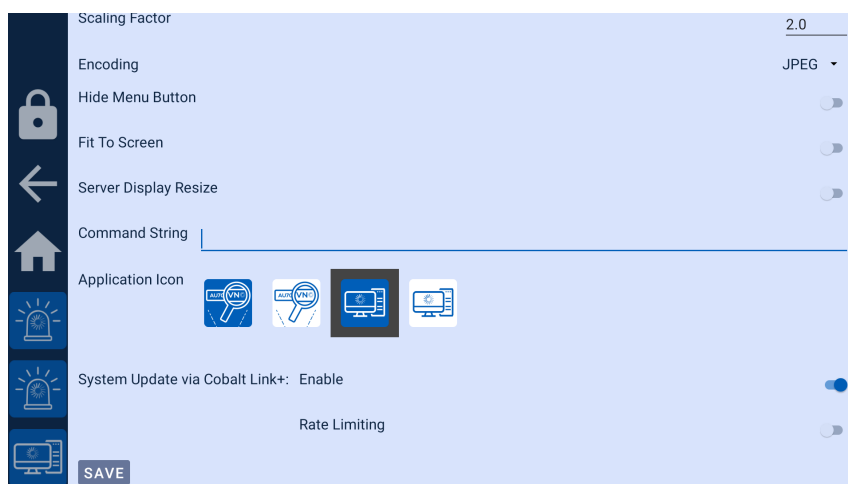


Figure 11: Cobalt Cube Settings to Enable and Limit the file transfer

8 System Update via Over-the-air (OTA)

For Cobalt Cubes running version 2.6.0 or above the option is available to pull updates automatically from the OTA System Update Service over the internet. When combined with the Automatic System Update Install option (section 5) this allows the device to apply system updates with little to no user input required.

8.1 Enabling internet updates

This feature is enabled from the Cobalt Cube admin settings menu (see Figure 12).

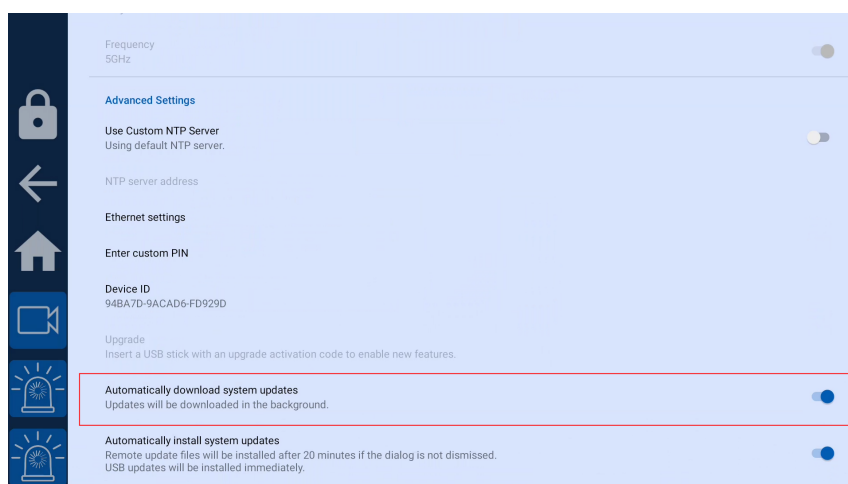


Figure 12: Enable internet based updates



Note: To receive updates via the internet the device date and time must be correct. If the download fails due to an incorrect time issue, a warning will show (as seen in Figure 13).

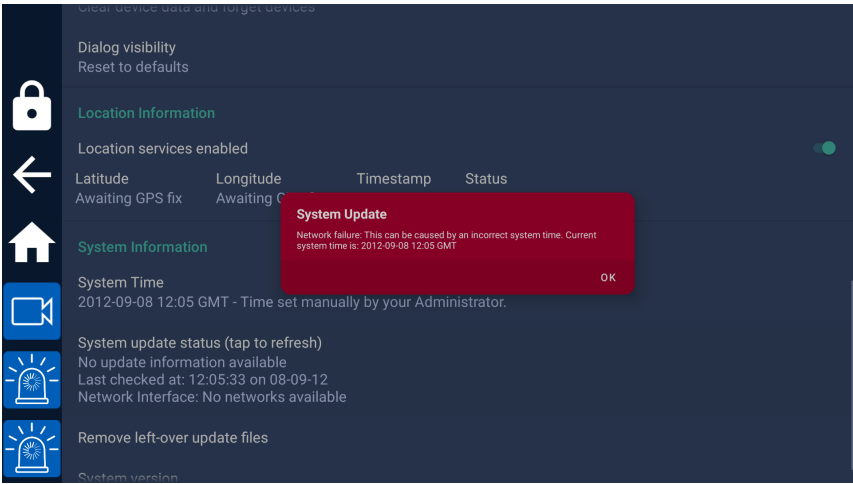


Figure 13: Incorrect system time warning

8.2 Receiving updates

The Cobalt Cube supports receiving updates via a number of network options:

Interface	Description
Ethernet	The built in Ethernet port on the Cobalt Cube
WiFi	Any pre-configured Wi-Fi network in range of the Cobalt Cube
USB	A USB mobile internet dongle with a SIM card. Please contact VNC Auto-motive for advice on supported devices

8.2.1 Enabling Wi-Fi

By default the Cobalt Cube ships with Wi-Fi disabled in favour of using the built-in Ethernet port. To enable Wi-Fi and connect to a network please use the option "Select network" under the "Wi-Fi" section of My Settings (see [Figure 14](#)).

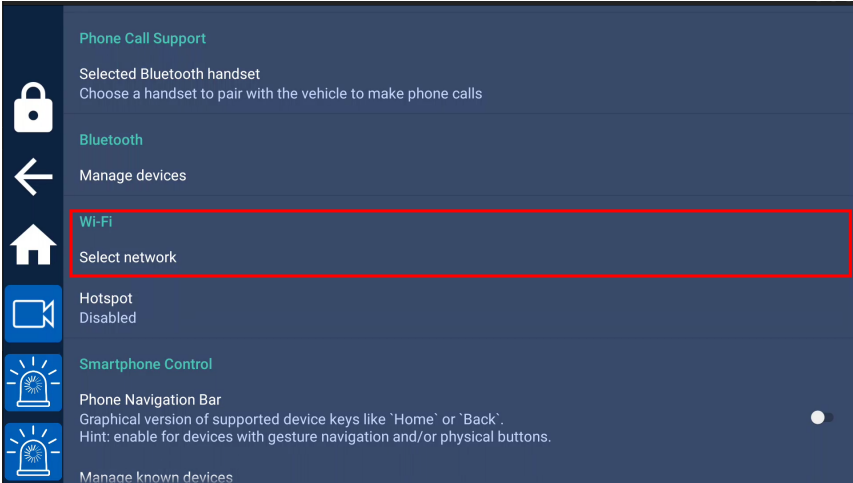


Figure 14: Enabling Wi-Fi on the Cobalt Cube

The Cobalt Cube will automatically cycle through the options listed above and select the one on which it can access the OTA System Update Service.

8.2.2 Firewall ports

The following ports will need to be open to the internet on the network the Cobalt Cube is connected to for the OTA System Update Service to function correctly.

port	in/out
80	out
443	out

8.3 Update check frequency

The Cobalt Cube will automatically check for an update every time the device boots.

Once the device has booted, the frequency of the check depends on the network circumstances.

Circumstance	Check interval
Device has internet connection and is up to date	2 hours
Device has no internet connection	30 seconds after the initial failure and every 20 minutes thereafter until the internet connection is restored.

8.4 Update installation

Once the Cobalt Cube has detected an update is available it will automatically be downloaded to the device.

To minimise network data usage, and to maximise reliability, the update process supports the pausing and resuming of a download if a network connection is lost and restored during the download (for example the vehicle goes out of range of a WiFi network and returns to it later).

Once an update has been downloaded the user will be prompted to install it. The manner of this prompt depends on the what setting has been chosen for the Automatic System Update Install option (see [section 5](#)).

8.4.1 Update prompt frequency

If the user chooses to dismiss the update dialog the system will remind them at intervals that an update is available. The interval between prompts varies depending on the number of times the dialog has been dismissed up to a maximum interval.

Dismiss count	Prompt interval
1	1 hours
2	3 hours
3	5 hours
4 and above	6 hours

8.5 Monitoring downloads

An end user can monitor the update process via the "System update status" section in My Settings (see [Figure 15](#)).

This allows for easy feedback on the current update status of the device and also allows for troubleshooting during setting up the device's connection to the internet.

In addition, tapping on this setting allows the user to request that the Cobalt Cube checks for an update immediately rather than having to wait for the next automatic check.

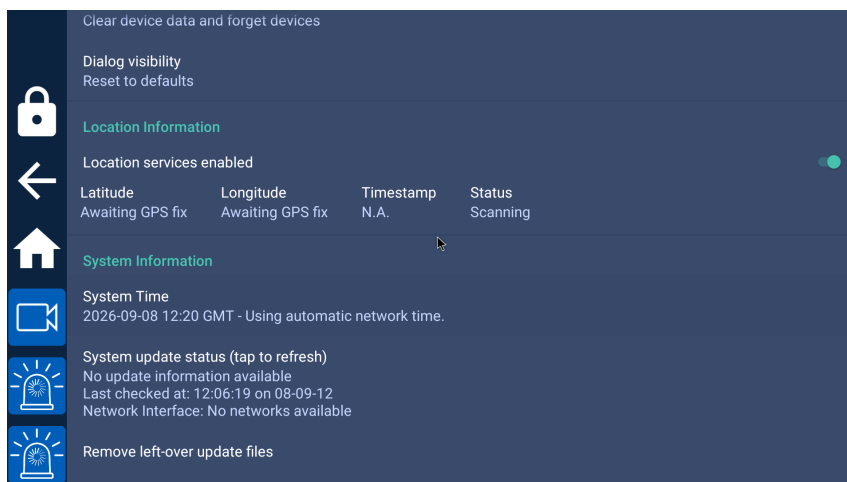


Figure 15: System update status

8.6 Sequential updates

If the Cobalt Cube to be updated has not been powered on for an extended period of time it is possible that multiple updates may be required. In this case these will be downloaded and applied sequentially from the OTA System Update Service.

9 Resetting the Update Process

If there has been a problem with applying an update for any reason, any residual files that may be causing an issue can be removed from the Cobalt Cube in the My Settings application. Choose “Remove left-over update files” (see Figure 16). A dialog will appear as in Figure 17. Select “Remove” to delete any old update files.

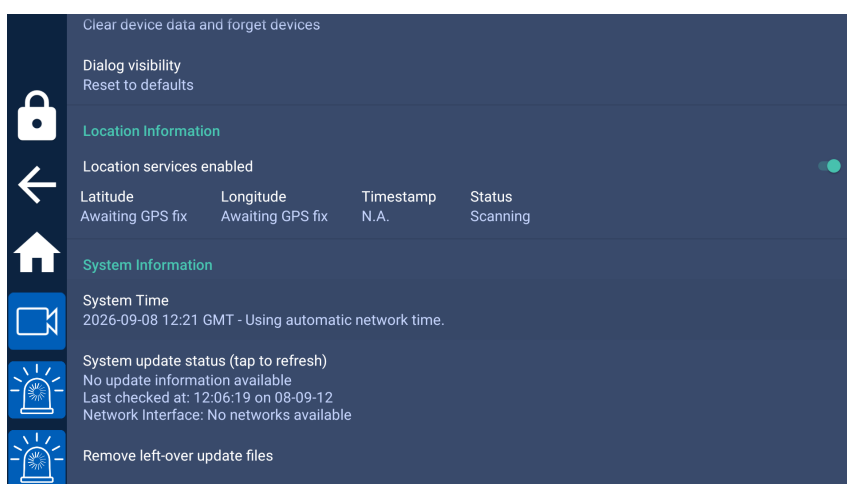


Figure 16: My Settings “Remove left-over update files”

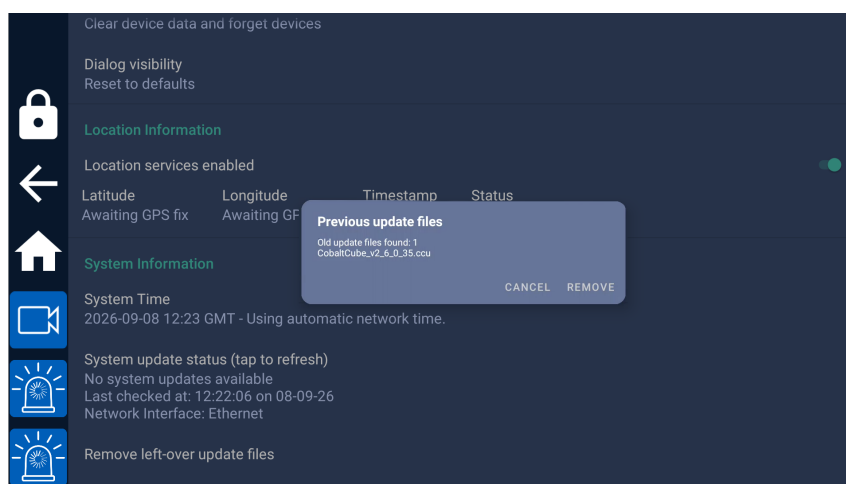


Figure 17: Left-over update file removal dialog

10 Appendix

10.1 Product Operation and Vehicle Compatibility

Usually, a car gets serviced once a year. However, software features are becoming increasingly sophisticated and more frequent updates are necessary. Car manufacturers roll out new software over the air to their cars. This means that new software is installed through an Internet connection directly to the car without the vehicle visiting a service centre. These updates can affect the operation of the infotainment system, which means it can affect the operation of the Cobalt Cube.

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.

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