crosscontrol

CCpilot V700

LinX Development Environment upgrade Guide

Revision history

Rev	Date	Author	Comments
2	2021-02-02	Anders Svedberg	Updated with CCLinux 2.0 related information and new Qt Creator
1	2020-09-11	Anders Svedberg	Initial document

Contents

1. Introduction

LinX Software Development Environment v4.0.3 is a preconfigured virtual machine containing development setup for many of CrossControl display devices.

To be able to use LinX DevEnv 4.0.3 with the new CCpilot V700 display, an upgrade package is made for this. The upgrade contains of new CCLinux SDK, Qt runtime and patches to Qt Creator to configure a build kit for the CCpilot V700. This documentation describes how to do this upgrade.

Instructions in this document is only valid for CCpilot V700 hardware REV 1.0+.

2. Downloading the upgrade files

To access the CCpilot V700 software, you need to log in to http://support.crosscontrol.com. Register a user account if needed.

Navigate to Display computer →CCpilot V700 where all related files can be downloaded.

2.1. SDK and OS image version

Make sure to upgrade your CCpilot V700 display to the latest OS image if you have an older install. It is possible to run the command "*ccsettingsconsole --version*" from the command line on the display to see your current OS version. If you already have the latest release available installed, skip the upgrade steps and only install the development environment files.

In section "Operating system Images, BSP's and SDK's" the following file are located. All released versions are available so select the latest version or each file.

- ccpilot-v700-linux-update-2.X.Y.Z-usb-stick.zip

- ccpilot-v700-linux-rescue-update-2.X.Y.Z-usb-stick.zip

- uuu-CCpilot-v700-X.Y.Z.0_release_image.zip

- V700_SS_v1.0.1.0.hex (SS, System Supervisor version)

2.2. Qt runtime

Navigate to Display computer →CCpilot V700 → Software and download the following files to your PC for later usage:

- Select the latest SDK version available from download area

  o CCLinux-SDK-toolchain-x86_64-CCpilot-V700-2.X.Y.Z.sh

- Select the latest available Qt packages, currently:

  o linx-qt515-v700-dev_5.15.2-1_all.deb

  o linx-qt515-v700_5.15.2-1_all.deb

  o linx-qt_5.15.2_v700.tar.gz

  o linx-qt_5.15.2_v700.sh

2.3. Qt Creator

In order to get the best experience with Qt 5.15, it is recommended to upgrade Qt Creator. Navigate to Software → LinX Software Suite 4 and download the following files to your PC for later usage:

- Select the latest available version of LinX UX Designer (Qt Creator), Qt runtime and templates from the download area, currently:

  o linx-ux-designer_4.14.0-2_amd64.deb

  o linx-qt515-vm_5.15.2-2_amd64.deb

  o linx-qtcreator-project-templates_1.1.0-beta.23_amd64.deb

3. Installation instructions

3.1. Upgrade CCpilot V700 display

3.1.1. OS Upgrade

This step is only needed if the CClinux version of the display is older than the latest version available on the support site. There are two alternative ways to perform the OS upgrade.

3.1.1.1. Alternative 1 - flash using uuu tool

1. Extract uuu-CCpilot-v700-X.Y.Z.0_release_image.zip to a folder on your PC.
2. Connect PC and CCpilot V700 display with a male – male USB cable.
3. Reboot CCpilot V700 with the "force" pin (green connector on development cable kit) set high.
4. Run "run-uuu" Windows batch file / Linux .sh script

5. Wait until completed
6. Reboot

3.1.1.2. Alternative 2 – USB upgrade

1. Extract ccpilot-v700-linux-update-X.Y.Z.0-usb-stick.zip to a USB stick
2. File cc-auto.sh should be located in root folder, not extracted to a sub directory of the USB stick
3. Enter USB stick to display
4. Files will be copied to display, then it should reboot and do the system upgrade
5. Repeat for ccpilot-v700-linux-rescue-update-X.Y.Z.0-usb-stick.zip

3.1.2. System Supervisor upgrade (SS)

1. Reboot the display to rescue mode, with the "sudo reboot-rescue.sh" built-in script.
2. Login again after reboot and check current SS version with these commands:

```
ccs@v700:~$ sudo su
root@v700:/home/ccs# cd /opt/
root@v700:/opt# ccsettingsconsole --version=SS
SSVersion: 1.0.1.0
```

3. Copy *V700_SS_v1.0.1.0.hex* (or newer) to /opt folder on the display using ssh or USB.
4. Run the update with these commands:

```
root@v700:/opt# ccsettingsconsole --advanced --update=SS --
filepath=/opt/V700_SS_v1.0.1.0.hex

File format is correct.
This operation may cause harm to your device.
Do you wish to continue [yes/no]?

yes

This upgrade can take a few minutes to perform.
Flashing 100 %
Done
SS successfully upgraded.
Please shut down the computer and cut the power in order for the update to
take effect.
root@v700:/opt#
```

5. Turn off power to reboot the display.
6. Log in again to verify with command "*ccsettingsconsole --version=SS"* that the new SS version is active.

3.2. Update virtual machine environment

Copy six of the earlier downloaded files to the LinX DevEnv v4.0.3. They will be installed in the virtual machine:

- linx-ux-designer_4.14.0-2_amd64.deb

- linx-qt515-vm_5.15.2-2_amd64.deb

- linx-qt515-v700-dev_5.15.2-1_all.deb

- linx-qt515-v700_5.15.2-1_all.deb

- linx-qtcreator-project-templates_1.1.0-beta.23_amd64.deb

- CCLinux-SDK-toolchain-x86_64-CCpilot-V700-v2.X.Y.Z.sh

It can be done using shared folder or direct download from CrossControl support site with the built-in web browser in the virtual machine. The downloaded files are then located in the /home/ccs/Download folder.

3.2.1. Install Linux SDK:

Run the following commands from a terminal window to automatically install SDK to the correct location. Make sure to replace X.Y.Z with the actual version number of the latest SDK.

Make sure to use the exact same path for SDK install (/opt/V700 – Capital V) ...

```
$ chmod +x CCLinux-SDK-toolchain-x86_64-CCpilot-V700-2.X.Y.Z.sh
$ ./CCLinux-SDK-toolchain-x86_64-CCpilot-V700-2.X.Y.Z.sh -d /opt/V700
```

3.2.2. Install Qt and Qt Creator

Qt Creator and Qt runtimes needs to be installed to be able to compile applications for CCpilot V700 display.

It is important to install Qt Creator first in order to have kits automatically added to Qt Creator.

linx-ux-designer ➡ linx-qt515-vm ➡ linx-qt515-v700 ➡ linx-qt515-v700-dev

In the case that this order is not followed, it is possible to reinstall *linx-qt515-vm*, *linx-qt515-v700* or *linx-qt515-v700-dev* after installing *linx-ux-designer* to solve this.

Note that the kits will not be available in Qt Creator 4.8 (default version in LinX DevEnv 4.0.3). They are only added automatically to the new Qt Creator 4.14.

3.2.2.1. Command line version

Open a terminal window and type the following commands (password: *default* if requested) and follow the on-screen instructions:

1. Begin with the Qt Creator:

```
$ sudo apt install ./linx-ux-designer_4.14.0-2_amd64.deb
```

2. Follow up with Qt runtime for the virtual machine, V700 and finally template projects:

```
$ sudo apt install ./linx-qt515-vm_5.15.2-2_amd64.deb
$ sudo apt install ./linx-qt515-v700_5.15.2-1_all.deb
$ sudo apt install ./linx-qt515-v700-dev_5.15.2-1_all.deb
$ sudo apt install ./linx-qtcreator-project-templates_1.1.0-
beta.23_amd64.deb
```

3.2.2.2. GUI version

Open menu and select "System Tools" → "GDebi Package installer".
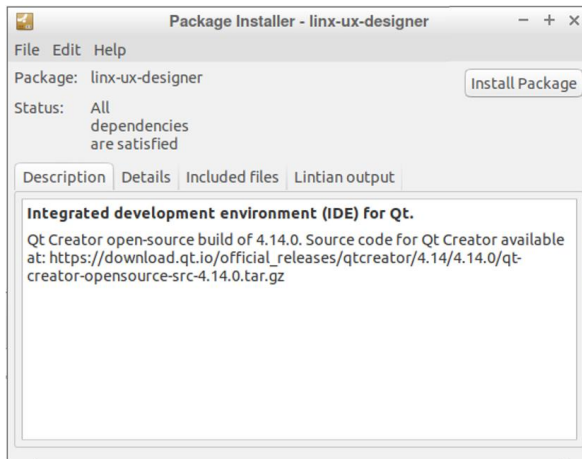
1. Select "File" → "Open file…" and navigate linx-ux-designer_4.14.0-2_amd64.deb

2. Press "Install Package".

Repeat for the remaining packages:

- linx-qt515-vm_5.15.2-2_amd64.deb

- linx-qt515-v700_5.15.2-1_all.deb

- linx-qt515-v700-dev_5.15.2-1_all.deb

- linx-qtcreator-project-templates_1.1.0-beta.23_amd64.deb

3.3. Install Qt on CCpilot V700 display

1. Copy following files to the CCpilot V700 display "/opt" folder using WinSCP/SCP or USB transfer.

    a. linx-qt_5.15.2_v700.tar.gz

    b. linx-qt_5.15.2_v700.sh

2. Log in to CCpilot V700 display using SSH

    a. User: ccs

    b. Password: default

3. Run the linx-qt installer script from the terminal with the following commands:

```
$ chmod +x linx-qt_5.15.2_v700.sh
$ sudo ./linx-qt_5.15.2_v700.sh
```

4. The installer will display information if the installation was successful or not. Verify the terminal output to determine the status of the installation

3.4. Qt Creator

Shortcuts for Qt Creator are added to the start menu and desktop with the installation of linx-ux-designer. Use this version of Qt Creator to have an improved experience with CCpilot V700 development. CrossControl Qt Creator template projects have also been updated to support CCpilot V700 with the installation of linx-qtcreator-project-templates.

3.4.1. Using CCpilot V700 build kit

The *linx-qt515-v700-dev_5.15.2-1_all.deb* package also adds the CCpilot V700 Qt build kit to the list of already pre-configured CrossControl displays computers (Qt Creator 4.14). It is now ready to be used. When creating a new project, mark it from the "Kit Selection" wizard page.
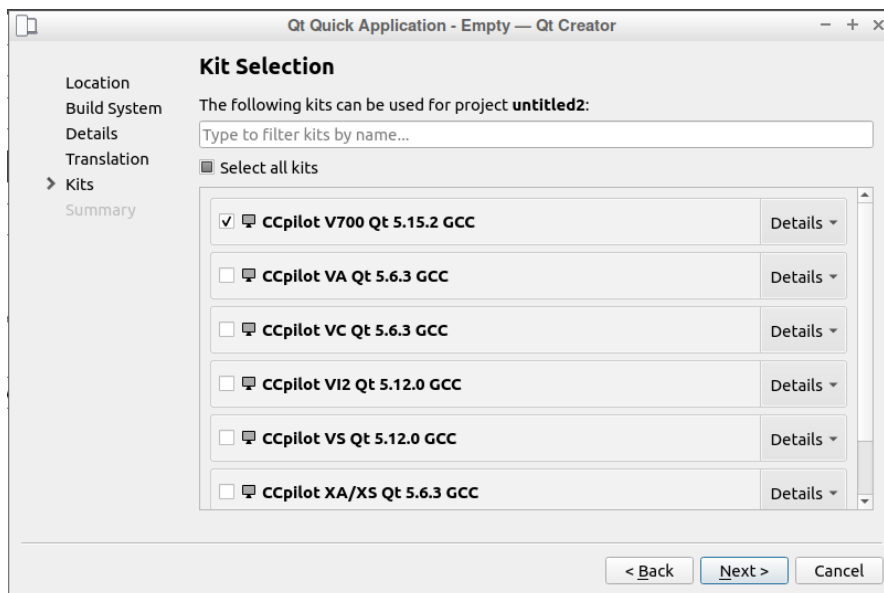
3.4.2. Enable root SSH access

To deploy, run or debug an application from Qt Creator, SSH access to the device is needed.

When running a Qt application on the CCLinux OS, it must be executed as root. For security reasons, SSH root login is disabled by default so on development displays this must be enabled first during application development. By logging in to the display as user ccs, it is possible to enable root SSH access by modifying the ssh configuration file. From the terminal, type:

```
$ sudo nano /etc/ssh/sshd_config
```

Find and change the line:

```
#PermitRootLogin prohibit-password
```

Change it to:

```
PermitRootLogin yes
```

Reboot or restart ssh service to enable root login via SSH. It is now possible to deploy, run and debug a Qt application as root to the CCpilot V700 display.

3.4.3. Display output

Qt for CCpilot V700 is pre-configured to use the eglfs_kms backend. For more information about this, please see the Qt documentation: https://doc.qt.io/qt-5/embedded-linux.html#eglfs-with-the-eglfs-kms-backend

It is also possible to use the plain eglfs backend if needed. Then these exports must be set in the Linux environment before running the Qt application to override the built-in eglfs_kms backend.

```
export QT_QPA_EGLFS_INTEGRATION=eglfs_viv
export QT_QPA_EGLFS_FORCEVSYNC=0
export QT_QPA_EGLFS_FORCE888=1
```

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