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Prepared: 2020-07-31 Nukala Tejeswar		Title: **Software Package 1.3.9.6 (420W01BT) Release Notes for Propulsion in WAG9/9H, WAP7, WAP5 Locomotives**	Document state: Released	BOMBARDIER
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IR Propulsion Set

Software Package Release Notes V 1.3.9.6

WAP7

WAP5

WAG9/WAG9H

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1. Introduction

1.1 Abstract

This document contains the release notes information for all software delivered by Bombardier for Propulsion Systems installed in WAG9/9H, WAP5, WAP7 locomotives with or without Hotel Load Converter Locomotives. Describes version information of Software binary part of released versions (Software_Package_Baseline_1.3.9.6).

1.2 Abbreviations and Definitions

Abbreviation	Description
BL	Bootloader
BUR	Auxiliary Converter
Cfg	Configuration
CCUO	Central Computing Unit – Operation Section
CLW	Chittaranjan Locomotive Works
DCU	Drive control unit
FW	Firmware
IR	Indian Railways
MAPP	Address plug programming tool for TCMS & converter control equipment
MCE	Micas-S2 Control Electronics, retained control equipment for the IR GP140 locomotive
MOBAD	Mode – Battery – Address Unit
MTVD	Download and version control tool for TCMS & converter control equipment
OS	Operating system
RDSO	Research Designs & Standard Organization
TCMS	Train Control and Management System
VCA	Vehicle Control Application
VCU	Vehicle control unit

Table 1: Abbreviations and Definitions

2. Software Package Delivery

The software release is delivered as a package (Software Package baseline 1.3.9.6) file and is not compatible with the previous releases.

The Package includes in the folders the following files:

Folder	Filenames	Description
Software_Package_Baseline_1.3.9.6 /CCUO_TCNGW	IRPRPSET_TCMS_1.6.8.7.mcp	Download container for CCUO1, CCUO2 and TCNGW MTVD OS + BL Cfg + Base Software.
Software_Package_Baseline_1.3.9.6 /CCON	IR_PRPSET_CCON_1.0.3.5.mcp	Download container for Converter Control Application MTVD. Including application software +OS + BL Cfg
Software_Package_Baseline_1.3.9.6 /HIRECT_AUX	HIRECT_Aux_Software Package-1.0.4.1.7z	Contains binary files of rectifier, inverter and Controllers inside BUR Unit.
Software_Package_Baseline_1.3.9.6 /HMI_4G	new_sw_4G_2_6_11_2_14_Aug_2020.tar.gz	HMI application for HMI4G.
Software_Package_Baseline_1.3.9.6 /Tooling/S19_Files	VCU2.S19 VCU2.S19 TCN_GW_C_1.S19	Configuration files for CCUO1: MOBAD Configuration files for CCUO2: MOBAD Configuration files for TCN_GW_C: MOBAD Note: These files are only required in case of replacement of defective controller devices. Please ask Bombardier maintenance staff for details.
Software_Package_Baseline_1.3.9.6/ Tooling/OTI_FIles	4 files in sub folder OTI_Files	Event & Condition data description files for TDS Uploader & Mavis
Software_Package_Baseline_1.3.9.6 /BT_PrpSet_TDSUploader_Settings	TDS uploader settings to upload diagnostics data	TDS Uploader setting file
Documentation	3EYP600299-2088__en_IR_PRPset_Software Package Release Notes V1.3.9.6.docx	Release notes of this software release (this document)

Table 2: Details of Software_Package_Baseline_1.3.9.6 (420W01BT) Delivery

3. Installation

3.1 Tools

To install this software release the following tools are required. The tool revision shall at least be as specified or higher (not for the TDS Uploader).

Tool Name	Revision	Identification
MTVD Version Control and Download	2.16.0.7	3EGM081360E0301
MAPP Address Plug Programming Tool	2.14.0.3	3EGM050810E0260
DCUTERM	3.6.0.814	3EST000202-9542
Tool for Downloading Software of AUX	-	TTProgDiag

Table 3: IR / RDSO / CLW Staff Tool list

3.2 Installation instruction

Preconditions

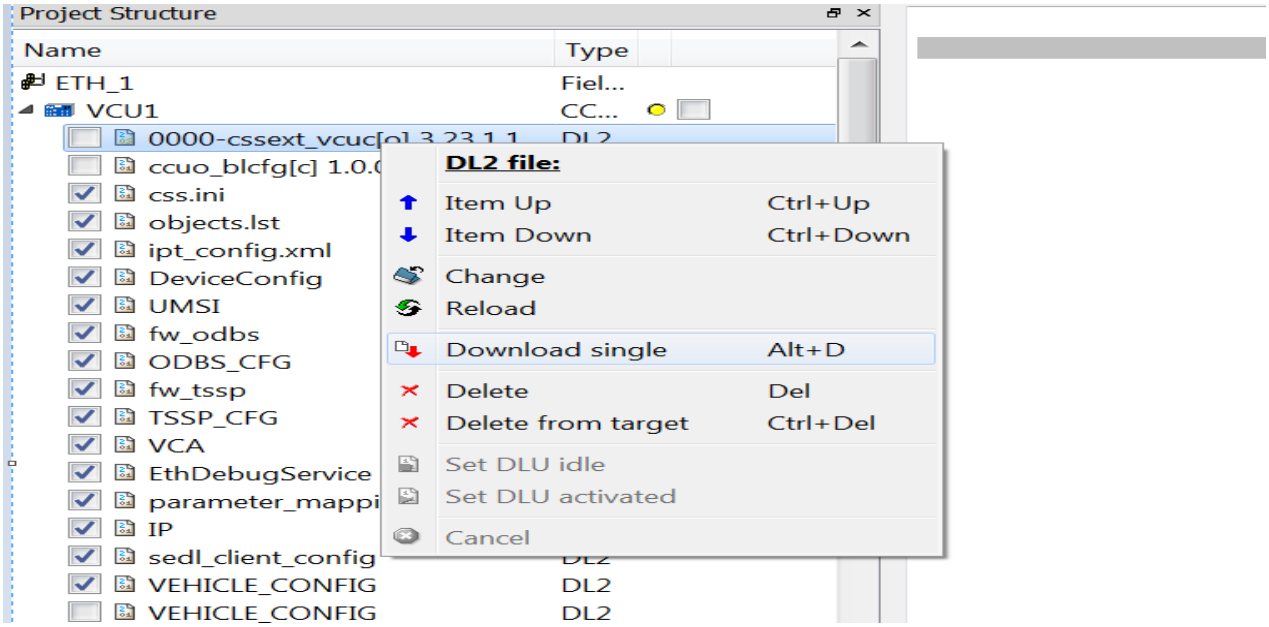
1. Before starting installation, the tools have to be installed on the PC according to the installation instructions provided with the tools.
2. The Ethernet configuration of the PC has to be set in the following way:
   IP address range: 10.0.0.215 to 10.0.15.254
   Subnet mask: 255.255.240.0
3. Ethernet service cable RJ45 connector to M12 connector
4. Connection between PC and CCUO1/CCUO2/TCNGW is established on ethernet.
5. Connection to processor of Auxiliary converter shall be established by RS232 interface.

Step1: Vehicle and PC preparation

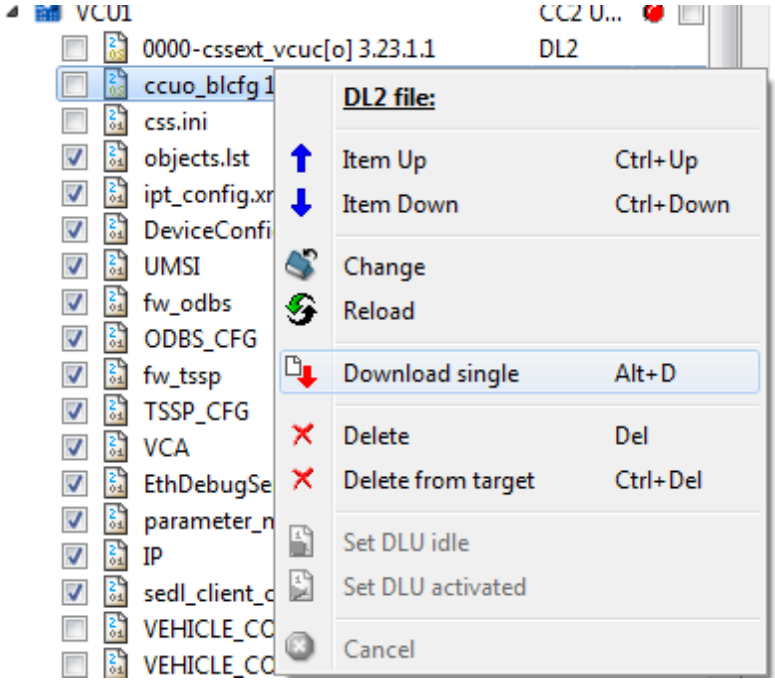
1. Check for good charged vehicle battery before starting installation or use the direct 110V DC power set.
2. Bring vehicle to a safe state by applying brake, switching off MCB and lower pantographs.
3. Connect the PC by Ethernet to the Ethernet connector in cab 2 for Converter or CCUO1/CCUO2/TCNGW download.
4. Extract the Release Zip file on the PC and the included zip files as well.

Step 2: If installing software for the first time: Download OS to CCUO1/CCUO2/TCNGW

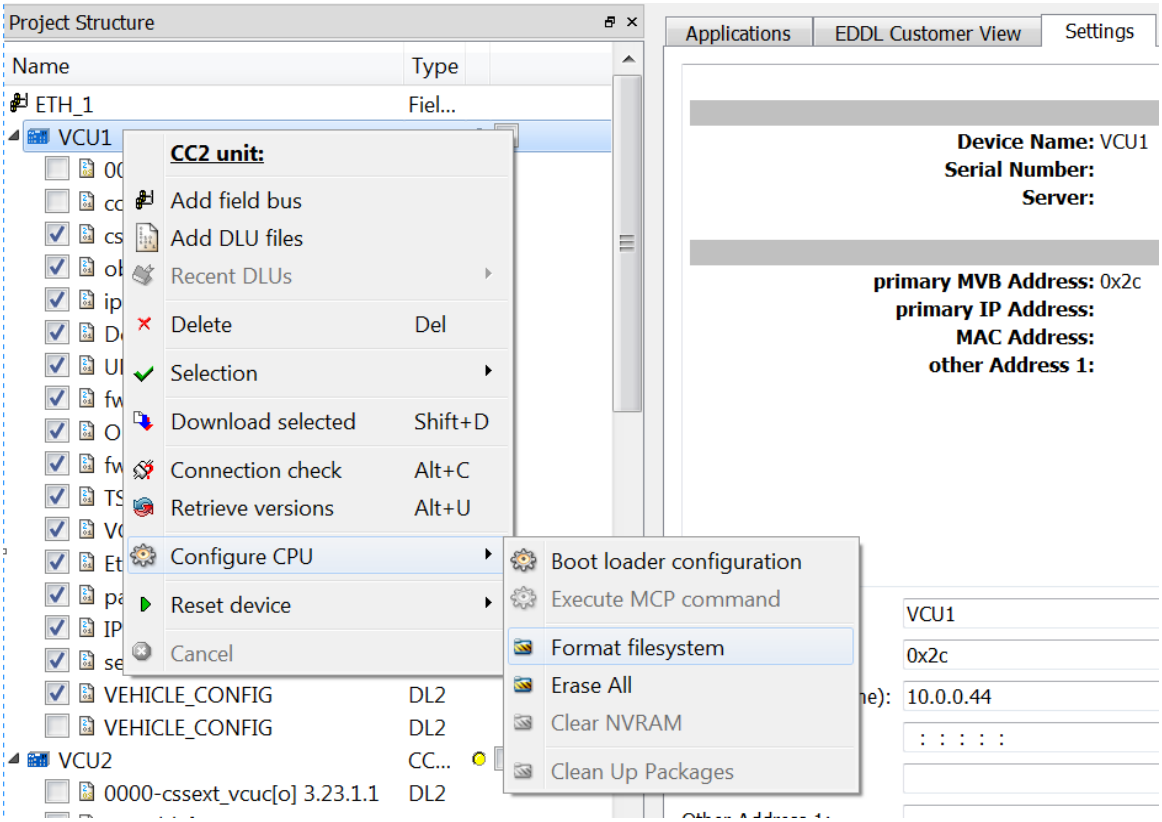
1. Open download configuration IRPRPSET_TCMS_1.6.8.7.mcp
2. Start connection check to CCUO1 by right clicking on the device.
3. This will check communication with VCU1 and if established the LED glow Green colour otherwise Red.
4. Right Click on the 0000-cssext_vcuc[o] 3.23.1.1 File to download OS of device. Select the download single as shown in below figure.



5. Once the OS is downloaded, right click on ccuo_blcfg 1.0.0.1 and select download single.



6. By Right clicking on CCUO1 device, select format file system present in configure CPU as shown in below figure.

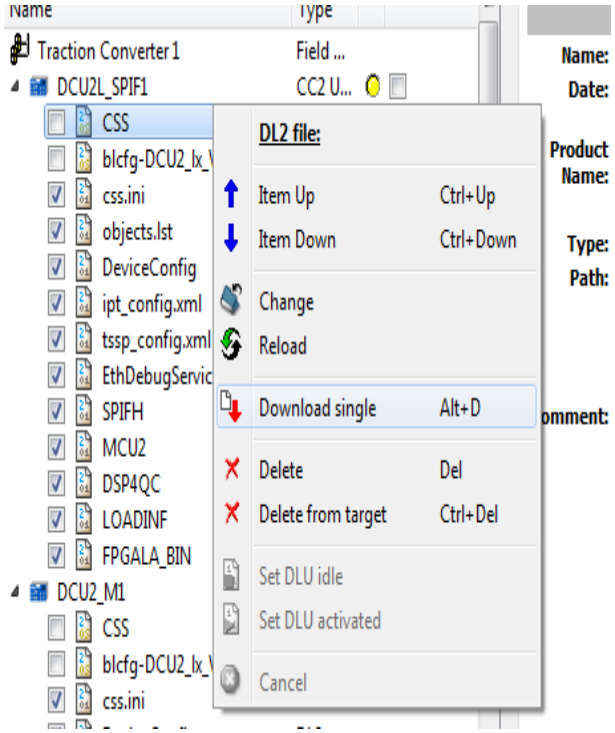


7. Repeat the above steps for CCUO2, TCNGW.

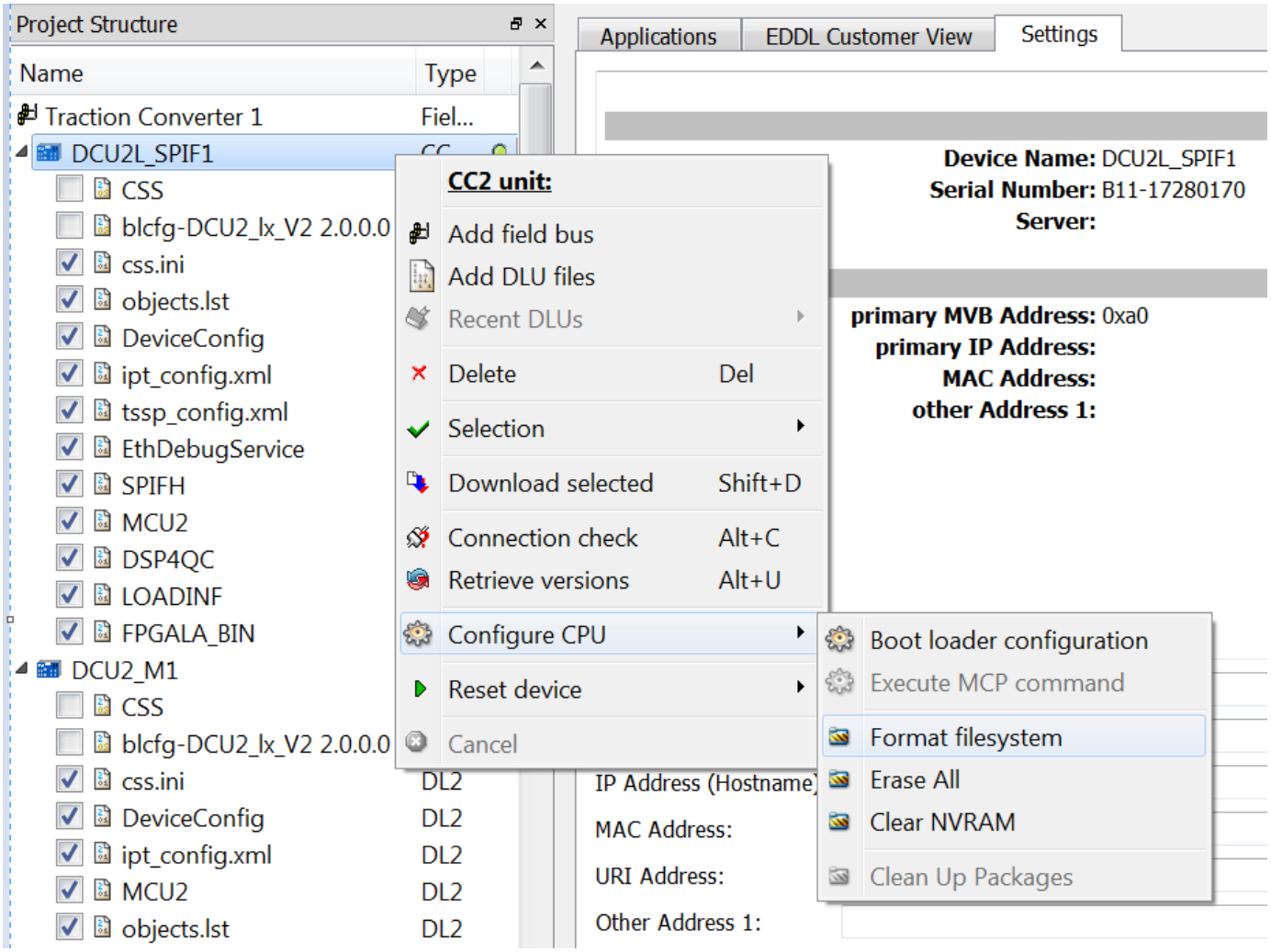
Step 3: If installing software for the first time: Download OS to DCU

Open download configuration IR_PRPSET_CCON_1.0.3.5.mcp

1. Start connection check to all devices and download CSS (OS) by right clicking on CSS and selecting download single.
2. Similarly download the blcfg-DCU2_lx_V2 2.0.0. file by right clicking on it and select the download single.



3. After successful download, right clicking on the device and select Format file system in Configure DCU. This creates file system.



Step4: Download Base software from PC to CCUO1/CCUO2/TCNGW

1. Open download configuration IRPRPSET_TCMS_1.6.8.7.mcp
2. Start connection check to CCUO1, CCUO2 and TCNGW
3. Select CCUO1 Base Software package to download with description as below. Ensure that file 0000-cssext_vcuc[o] is **NOT** Selected.
4. After download is finished successfully, select VCU1, right click and select Reset device→restart to OS Run
5. Repeat steps for CCUO2, TCNGW.

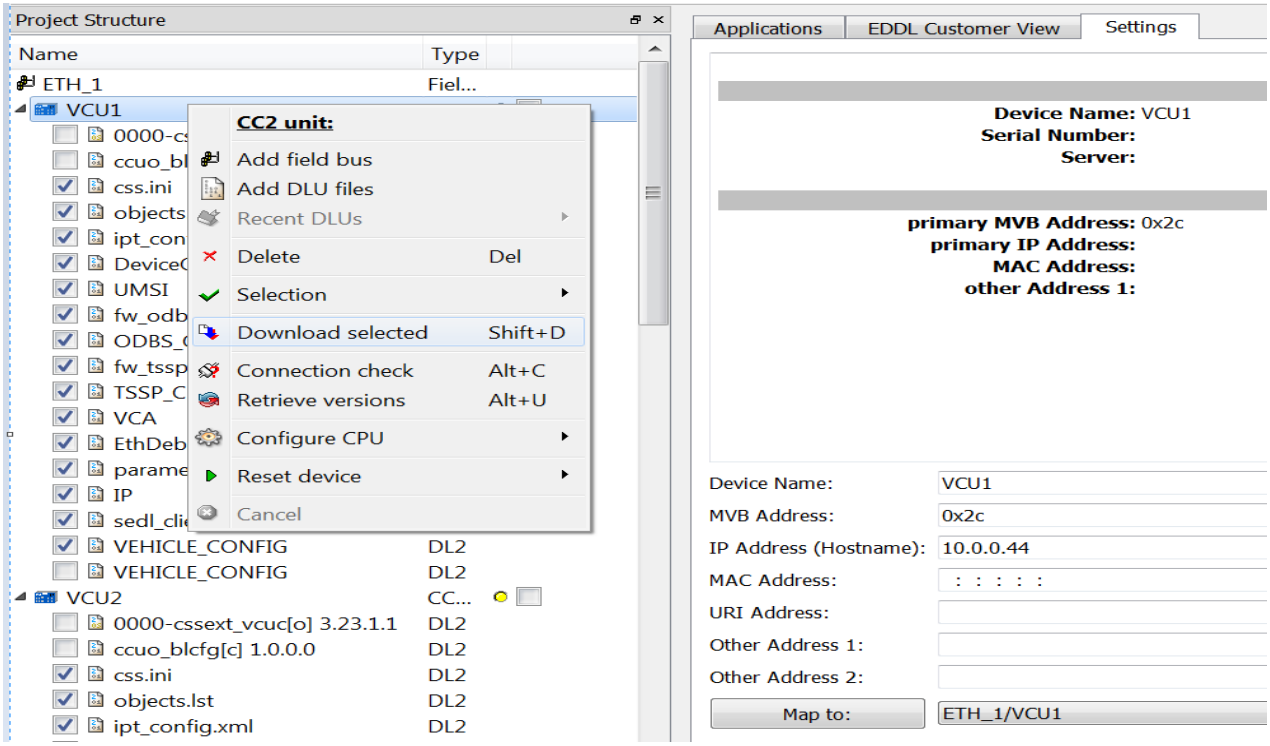
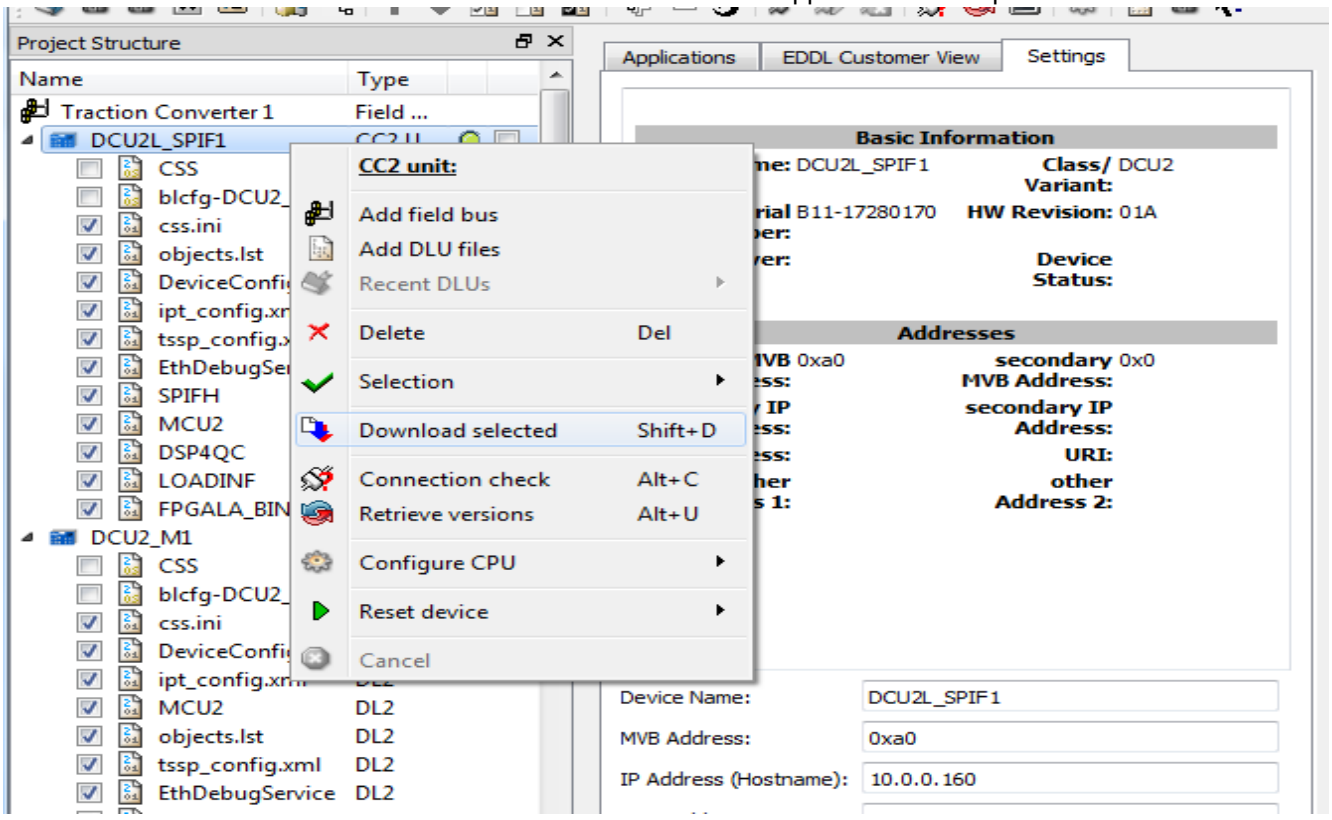


Figure 1: Download Application via MTVD

Step5: Download Base software from PC to DCU

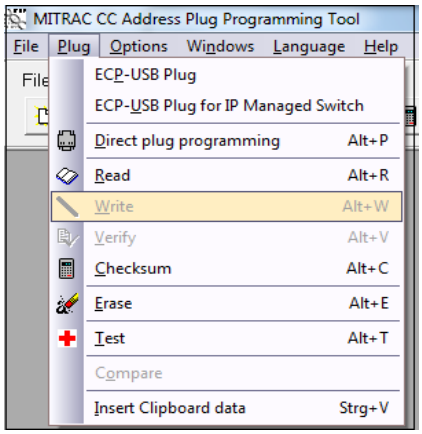
1. Open download configuration IR_PRPSET_CCON_1.0.3.5.mcp
2. Start connection check to all CCON DCUs and Download the applications to respective DCUs



Step 6: Flash MOBAD configuration for CCUO1, CCUO2 and TCNGW MOBD using MAPP Tool : Plug→Write

1. Before executing command ensure MOBAD is connected to PC using USB to DB9 cable.
2. Select file to write and execute write option as shown below.

- Perform the above steps 1, 2 for CCUO1 with file: VCU1.S19
- Perform the above steps 1, 2 for CCUO2 with file: VCU2.S19
- Perform the above steps 1, 2 for TCNGW with file: TCN_GW_C_1.S19



Step 7: HMI Software shall be downloaded on DDUs using web interface via http://10.0.0.200/login.php for DDU1 and http://10.0.0.201/login.php for DDU2. Login with user's name: admin password: eiWEB.

Step 8: Aux Software shall be downloaded on BUR1, BUR2 and BUR3 using RS232 interface via TTProDiag tool. Details are part of documentation "Software Uploading Procedure using FLASHit in Control Cards.pdf" shared part of software package.

4. Changes:

4.1 New or enhanced functions

CCUO:

1) Resolved ZPT long press required for raising Pantograph
2) For properly handling angle transmitter failure messages, angle transmitter Scaling is improved for allowing current up to 21mA.
3) Shunting Mode messages shall appear after every movement of MAC position from Zero to Traction
4) Water Closet Functionality
5) Allowing wheel diameter maximum value to 1098 mm
6) Resolved Hotel load ON command timing issue

CCON:

1) Line side converter control parameters are fine tuned to reduce IGBT failures

BUR:

1) To resolve unknown BUR frequent re-start without BUR isolation.
2) To avoid frequent BUR isolation by changing BUR restoring events.

HMI:

1) Water Closet Occupied Message added.
2) Allowing Max. Wheel diameter value to 1098 mm from entering on HMI.

4.2 Adaptations and corrected errors

CCUO:

None

CCON:

None

BUR:

None

HMI:

None

4.3 Known problems

CCUO:

None

CCON:

None

BUR:

None

HMI:

None.

5. Dependencies

5.1 Compatibility to earlier software releases

TCMS Software:
Compatible with earlier release

CCCON/ BUR:
Compatible with earlier release

.

HMI4G:
New Operating system file name as “hmi-o-btroq_new_sw_kernel.tar” to be downloaded with application

5.2 Hardware dependencies

The software can be used on all WAG9, WAG9H, WAP7 with and without Hotel load, WAP5 locomotives with the Bombardier Propulsion set equipment. Locomotive configuration file to be downloaded as per Vehicle configuration in CCUO.

There are no other known hardware dependencies.

6. High Level Summary of Software Versions

Device	Software_Package_Baseline_1.3.9.6 Version
CCUO1	1.6.8.7
CCUO2	1.6.8.7
TCNGW	0.1.0.2
DCUL/SPIF	1.0.3.5
DCUM	1.0.3.5
HMI4G	2.6.11.2
BUR1	1.8.2.2
BUR2	2.8.2.2
BUR3	3.8.2.2

Table 4: Software Versions of Baseline 1.3.9.6

7. Version information for Software_Package_Baseline_1.3.9.6 (420W01BT)

7.1 Vehicle Control software

The software version screen on the drivers display shows the version of the CCUO1 and CCUO2.

Device name	Device ID	Built in cubicle	Device type	IP-address
CCUO1		TC1	VCU-C	10.0.0.44
CCUO2		TC2	VCU-C	10.0.0.46
TCNGW		VCU-Cubicle 1	TCN-GW-C	10.0.0.6

Used on Device	Application type	Application name	Version
CCUO1	DL2-standard	VCU-C Operating System	3.23.1.1
CCUO1	Cfg	Ccuo_blcfg[c]	1.0.0.1
CCUO1	AP	Software Application	1.6.8.7

Table 5: CCUO1 Base Software Package

Used on Device	Application type	Application name	Version
CCUO2	DL2-standard	VCU-C Operating System	3.23.1.1
CCUO2	Cfg	Ccuo_blcfg[c]	1.0.0.1
CCUO2	AP	Software Application	1.6.8.7

Table 6: CCUO2 Base Software Package

Used on Device	Application type	Application name	Version
TCNGW	DL2-standard	TCNGW Operating System	3.10.0.3
TCNGW	Cfg	tcngw_blcfg	1.0.0.1
TCNGW	AP	Software Application	0.1.0.2

Table 7: TCNGW Base Software package

7.2 Converter Control software

Device name	Built in cubicle	Device type	IP-address	MVB Address
DCU2L_SPIF1	TC1	DCU-2	10.0.0.160	0xa0
DCU2_M1	TC1	DCU-2	10.0.0.161	0xa1
DCU2_M2	TC1	DCU-2	10.0.0.162	0xa2
DCU2_M3	TC1	DCU-2	10.0.0.167	0xa7
DCU2L_SPIF2	TC2	DCU-2	10.0.0.136	0x88
DCU2_M4	TC2	DCU-2	10.0.0.137	0x89
DCU2_M5	TC2	DCU-2	10.0.0.138	0x8a
DCU2_M6	TC2	DCU-2	10.0.0.143	0x8f

Table 8: CON Control Device IP Addresses

Used on Device	Application type	File name	Version
DCU2L_SPIFn	OS	DCU2 Operating System	3.16.1.2
DCU2L_SPIFn	OS Cfg	Blcfg-DCU2_ix_V2 2.0.0.0	2.0.0.0
DCU2L_SPIFn	AP	Software Application	1.0.3.5
DCU2_Mn	OS	DCU2 Operating System	3.16.1.2
DCU2_Mn	OS Cfg	Blcfg-DCU2_ix_V2 2.0.0.0	2.0.0.0
DCU2_Mn	AP	Software Application	1.0.3.5

Table 9: CON processors application versions

7.3 HMI Software

Device	Type	File name	Versions
HMI4G	Bin	new_sw_4G_2_6_11_2_14_Aug_2020.tar.gz	2.6.11.2

Table 10: HMI Application Version.gz

7.4 BUR Software

BUR	Version of the s/w (a.b.c.d)	Name of downloadable File
BUR1	1.8.2.2	zins1822.elf
BUR2	2.8.2.2	Zins2822.elf
BUR3	3.8.2.2	Zins3822.elf

Table 11: BUR-Diagnostics processors software Version

Sr. No.	Details	BUR	Control Card Details	Version of the s/w (a.b.c.d)	Name of downloadable File
1	Software for Main Control Cards (2000-138, 2000-139 & 2000-140)	BUR1	2000-138	Rev. R09A	HB13809A.hex
		BUR1	2000-139	Rev. R09A	HB13909A.hex
		BUR2	2000-138	Rev. R09A	HB23809A.hex
		BUR2	2000-139	Rev. R09A	HB23909A.hex
		BUR3	2000-138	Rev. R09A	HB33809A.hex
		BUR3	2000-139	Rev. R09A	HB33909A.hex
		LVPS	2000-140	Rev. R09A	HBC4009A.hex

Table 12: BUR- CCU/LVPS Control Unit processors software Version

8. Revision History

Rev.	Edited	Checked	Approved	Remark
__	2020-08-01 Tejeswar Nukala	2020-08-04 Ketan Shah	2020-08-05 Kalpesh Devariya	--