



DiagnosticLink 8.20 Features

Service Diagnostics & Tools

6/6/2024

DiagnosticLink® 8.20 Features Summary

- Updated the support files (CBFs, SMR-Ds, and SCBFs) for powertrain, chassis, and EMG ECUs.
- Added a new 'Hardware' tab to the 'Options' dialog. The 'SID Configure' option has been moved to this new tab (formerly located within the 'Connection' tab). The 'Hardware' tab also allows the user to freely configure how each installed PDU-API is used.
- Added OIDC login option to the 'Server' tab. The OIDC option can be checked to connect to the required server for Gen 5 Cascadia support (with CeBID enabled ECUs).
- Added the 'ECP Valve Monitoring Instrumentation' panel allowing ECP01T to display the valve positions.
- The SID version is now displayed in the 'Help About' menu.
- When prohibited, the programming option to 'Newest' will not be available for chassis ECU programming.
- The tool will display 'This option is not available for the current license' on the 'Select operation' page.
- Modified the 'XMC-Digital Pinouts I/O Control' panel to include 'Fast Out State' instruments for new XMC Domain time sensitive output.

DiagnosticLink® 8.20 Features Summary (cont.)

- Resolved an error with the 'NOx Sensor Verification' panel where the routine did not complete. The routine will now work with ACM301T.
- Added a new 'Hardware' tab to the 'Options' dialog.
- 'Anti-Lock Braking System Instrumentation' panel has been added for SBSP01T.
- Updated the 'Telematics' panel for CTP03T new hardware variants.
- Fixed issue where the initial display of DiagnosticLink® may be empty if the connected vehicle or fixture does not contain content assigned to the display within the 'Common' panel.
- DiagnosticLink® is now sourced to retrieve troubleshooting content from the new TechLit system.
- Updated the registration message to more clearly define the different scenarios (e.g., corporate, customer, and manufacturing use cases).
- Starting with DiagnosticLink® 8.20, Microsoft .Net Framework 4.8 is required.
- Added instruments to the 'eTransmission Diagnostics Instrumentation' panel.
- Updated the 'eDrive Coolant Loop Test' panel to make the diagnostics functional.
- 'Interior Lighting' panel added for EMG.

Updated Support Files

- CBF file updates included for powertrain ECUs:

ECU	TCM05T	CPC302T	CPC502T	MCM21T
CBF Version	00.00.022	01.00.632	(SMR-D) 02.00.89	21.0.526

- CBF file updates included for chassis ECUs:

ECU	CGW04T	ECP01T	ICC501T	ICUC01T	IPPC01T	OPSR01T	RDF01T	SAS03T	XMC402T	XMC502T	XMC602T
CBF Version	01.01.102	02.00.071	01.01.891	02.03.321	0.00.983	04.00.081	0.00.281	03.00.181	01.00.421	01.00.421	01.00.421

- SMR-D file updates included for chassis ECUs:

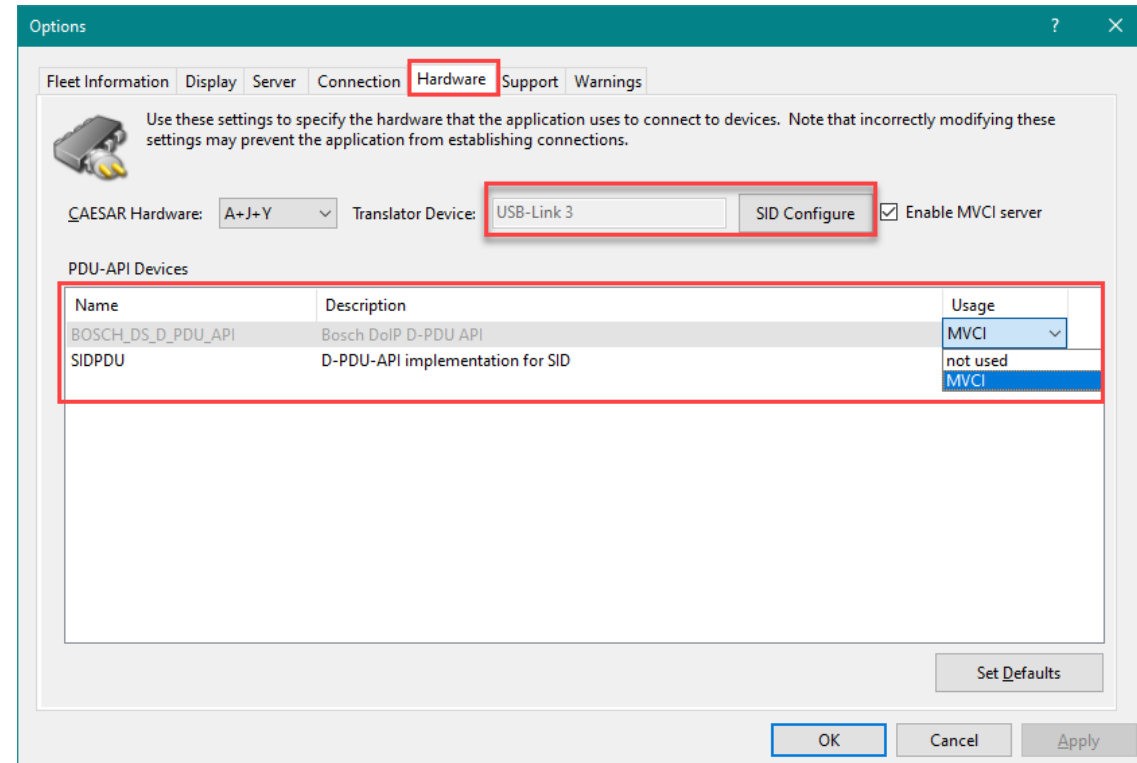
ECU	CGW05T	CTP03T	ICC501T	MPC03T	RDF03T	SAS02T	SATP01T	SBSP01T	SRRFL02T	SRRFR02T	SRRL02T	SRRR02T	VRDU03T
CBF Version	04.02.90	04.02.90	01.01.921	04.04.90	04.03.00	04.03.00	04.03.70	04.02.70	04.02.50	04.02.50	04.02.50	04.02.50	04.02.70

- SCBF file updates included for EMG ECUs:

ECU	BMS01T	BMS201T	BMS301T	BMS401T	BMS501T	BMS601T	BMS701T	BMS801T	BMS901T	ECPC01T
CBF Version	01.00.262	01.00.262	01.00.262	01.00.262	01.00.262	01.00.262	01.00.262	01.00.262	01.00.262	00.00.329

Hardware Tab Added to the Options Dialog

- A Hardware tab has been added to the Options dialog.
- SID Configure (formerly located under the Connection tab) can be used to configure the installed device drivers.
- CAESAR Hardware and PDU-API Devices can be configured under the Hardware tab as well.



OIDC Login Option

- As part of CeBID cyber security, the OIDC login option has been added to the Server tab. Selecting this option enables the OIDC server connection which is required for Gen 5 Cascadia with CeBID enabled ECUs.
- When checked or unchecked, will flip between OIDC and SiteMinder based connection.

Default SiteMinder Login

The screenshot shows the 'Options' dialog box with the 'Server' tab selected. The 'Use OIDC' checkbox is unchecked. The configuration fields are as follows:

- Server Name: dtna-DirInfo.prd.freightliner.com
- Port Number: 48481
- Login: https://dtna-iservices2.prd.freightliner.com/AuthN-Basic-SM
- EDEX Server: https://edex.daimlertruck.com/
- Techlane Server: https://techlane-dtna.prd.freightliner.com

Below the fields are buttons for 'Deauthorize' and 'Test Network'. At the bottom, there are checkboxes for 'Use the manual unlock dialog for devices that require server generated security keys.' and 'Automatically download updated troubleshooting material whenever logged on.' An 'Authentication' dialog box is overlaid on top, prompting for 'User Name' and 'Password' with a 'Remember my user name' checkbox and a 'Login Help' link. At the bottom of the main dialog are 'OK', 'Cancel', and 'Apply' buttons.

OIDC Login (option checked)

The screenshot shows the 'Options' dialog box with the 'Server' tab selected. The 'Use OIDC' checkbox is checked. The configuration fields are as follows:

- Server Name: dlbroker-dtna-oidc.prd.freightliner.com
- Port Number: 443
- Login: https://idp-dtna.prd.freightliner.com
- EDEX Server: https://edex-persist-dtna-oidc.prd.freightliner.com/edex-persist-service
- Techlane Server: https://techlane-dtna-oidc.prd.freightliner.com/techlane

Below the fields are buttons for 'Deauthorize' and 'Test Network'. At the bottom, there are checkboxes for 'Use the manual unlock dialog for devices that require server generated security keys.' and 'Automatically download updated troubleshooting material whenever logged on.' An 'Authentication' dialog box is overlaid on top, showing the 'DAIMLER' logo and a 'LOGIN' form with 'Username' and 'Password' fields, a 'LOG IN' button, and links for 'New User', 'Forgot Password', and 'Change Password'. At the bottom of the main dialog are 'OK', 'Cancel', and 'Apply' buttons.

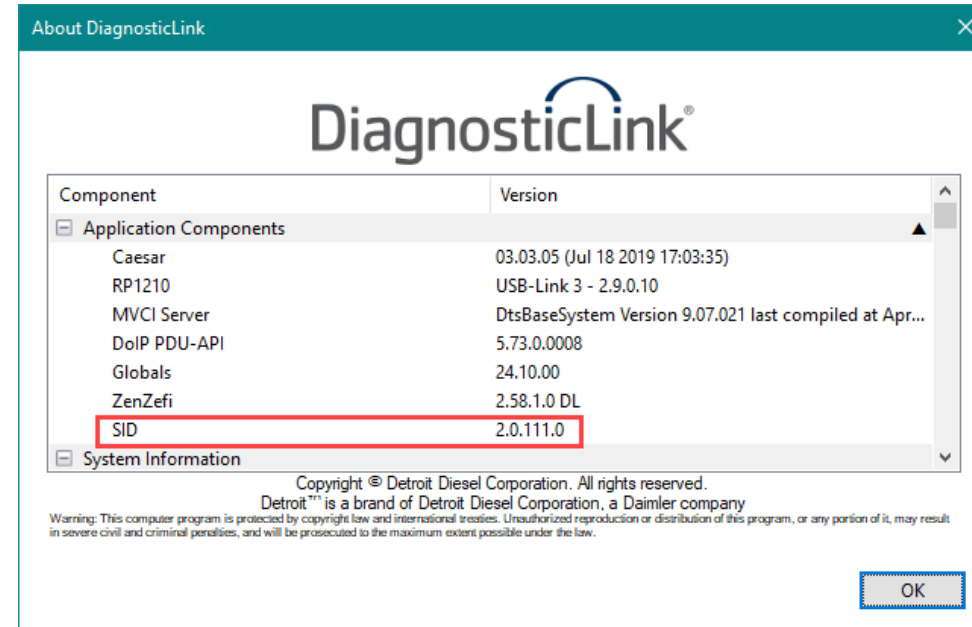
ECP Valve Monitoring Instrument Panel

- The ECP Valve Monitoring Instrument panel has been added to allow ECP01T to display the valve position.
- This panel displays the valve positions and provides technician with the information on which valves are installed on the vehicle.

Valve	Status	Installed	Not Installed
Valve 1	Valve Open		
Valve 2	Valve Open		
Valve 3	Valve Open		
Valve 4	Valve Open		
Valve 5	Valve Closed		
Valve 6	Not Installed		
Valve 7	Not Installed		
Valve 8	Not Installed		
Valve 9	Not Installed		
Valve 10	Not Installed		
Valve 11	Not Installed		
Valve 12	Not Installed		
Valve 13	Not Installed		
Valve 14	Not Installed		
Valve 15	Not Installed		
Valve 16	Not Installed		
Valve 17	Not Installed		
Valve 18	Not Installed		

SID Version Displayed in Help About Box

- Added the SID version used by the application, to the Help > About box.



Program Option to 'Newest' Prohibited for Chassis ECUs

- When prohibited, the programming option to 'Newest' will not be available for chassis ECUs in certain scenarios.
- The tool will display 'This option is not available for the current license' on the 'Select operation' page.
- This feature is to assist in mitigating programming incompatible software.

Gather server data	Select operation	Program device
2022 Freightliner New Cascadia 126 Sleeper Cab		
Select the device to program		
<input type="radio"/> CPC501T - Common Powertrain Controller 5 - <i>The Depot server did not provide any data for this unit.</i> <input type="radio"/> MCM21T - Motor Control Module 2.1 - <i>The Depot server did not provide any data for this unit.</i> <input type="radio"/> TCM01T - Transmission Control Module MY2013 - <i>The Depot server did not provide any data for this unit.</i> <input type="radio"/> IPPC01T - Integrated Predictive Powertrain Control - <i>The Depot server did not provide any data for this unit.</i> <input type="radio"/> SAS01T - Steering Angle Sensor - <i>This device is not programmable for New Cascadia 2020, Western Star 49X, Western Star 47X, Western Star 57X</i> <input type="radio"/> ICUC01T - Instrument Cluster - OK <input type="radio"/> HVAC_F01T - HVAC Front - OK <input type="radio"/> SSAM02T - Single SAM - OK <input checked="" type="radio"/> CGW04T - Central Gateway - OK <input type="radio"/> RDF02T - Radar Frontend 2 - OK <input type="radio"/> ACM301T - Aftertreatment Control Module 3 - <i>The Depot server did not provide any data for this unit.</i> <input type="radio"/> HVAC_R01T - HVAC Rear - OK <input type="radio"/> CTP01T - Common Telematics Platform - <i>The server did not provide data for this optional device</i> <input type="radio"/> MPC02T - Multi Purpose Camera 2 - OK <input type="radio"/> APS301T - Adaptive Power Steering 2 - OK <input type="radio"/> SRRR01T - Side Radar - OK		
Select the reprogramming operation you wish to take place		
<input checked="" type="radio"/> Replace Device Settings with Server Configuration		
Select the configuration to apply to the device		
<input type="radio"/> ⚠ Factory - <i>Factory settings cannot be programmed after software has been upgraded. Original software: A0004488927-012.</i> <input checked="" type="radio"/> Latest - DiagnosticLink upload configuration - 3/20/2024 1:43:12 PM - OK <input type="radio"/> ⚠ Newest - DiagnosticLink upload configuration - 3/20/2024 1:43:12 PM - <i>This option is not available for the current license</i>		

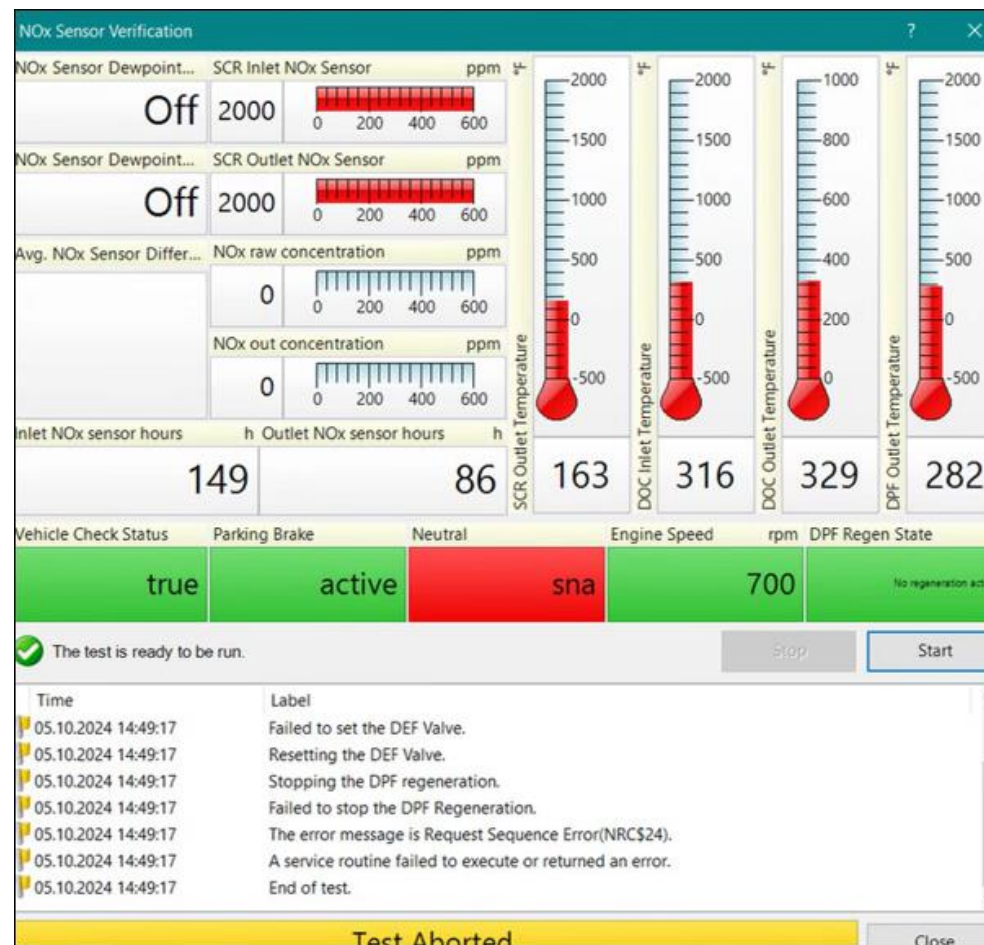
XMC-Digital Pinouts I/O Panel Modification

- 'Fast Out State' instruments has been added for new XMC Domain time sensitive output.
- Qualifiers:
 - DDFSC_FastOut0001_state through
 - DDFSC_FastOut0018_state

XMC - Digital Pinouts					
	Name	Fast Out State	State	On	Off
XMC02T Output Return Control	Digital Output 1(X3 - 12)	OFF	OFF	On	Off
XMC202T Output Return Control	Digital Output 2(X3 - 18)	OFF	OFF	On	Off
XMC302T Output Return Control	Digital Output 3(X3 - 15)	OFF	OFF	On	Off
XMC402T Output Return Control	Digital Output 4(X3 - 3)	OFF	OFF	On	Off
XMC502T Output Return Control	Digital Output 5(X3 - 6)	OFF	OFF	On	Off
XMC602T Output Return Control	Digital Output 6(X3 - 9)	OFF	OFF	On	Off
	Digital Output 7(X3 - 16)	OFF	OFF	On	Off
	Digital Output 8(X3 - 10)	OFF	OFF	On	Off
	Digital Output 9(X3 - 19)	OFF	OFF	On	Off
	Digital Output 10(X3 - 13)	OFF	OFF	On	Off
	Digital Output 11(X2 - 11)	OFF	OFF	On	Off
	Digital Output 12(X2 - 24)	OFF	OFF	On	Off
	Digital Output 13(X2 - 6)	OFF	OFF	On	Off
	Digital Output 14(X2 - 19)	OFF	OFF	On	Off
	Digital Output 15(X2 - 9)	OFF	OFF	On	Off
	Digital Output 16(X2 - 22)	OFF	OFF	On	Off
	Digital Output 17(X2 - 8)	OFF	OFF	On	Off
	Digital Output 18(X2 - 21)	OFF	OFF	On	Off
	Digital Input 1(X2 - 48)		SNA		
	XMC02T	XMC202T	XMC302T	XMC402T	XMC502T
				XMC602T	

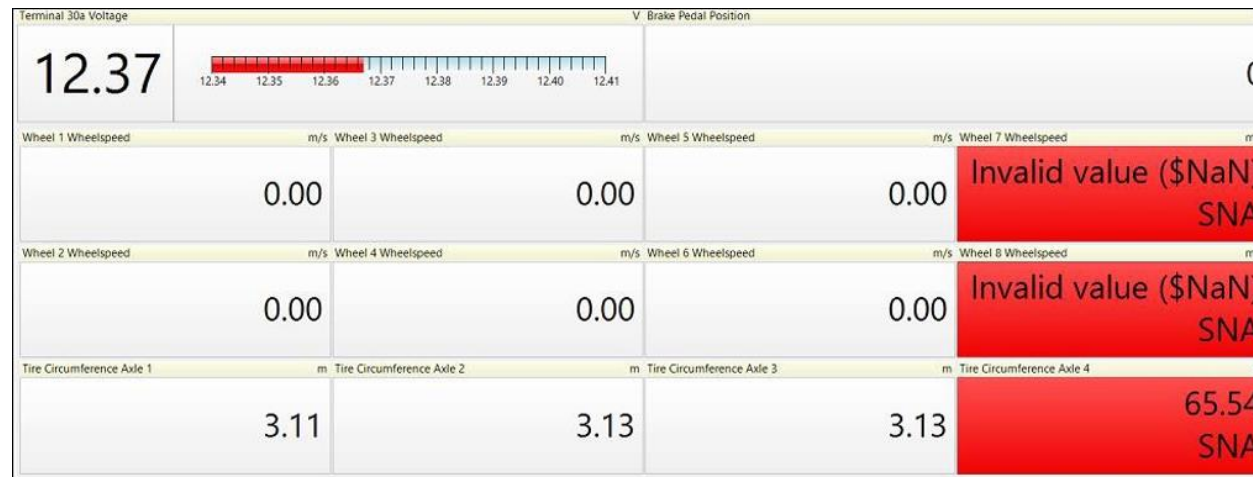
NOx Sensor Verification Panel Operation

- Resolved issue where the NOx Sensor Verification routine would not complete.
- The routine is now adapted to work for use with ACM301T.



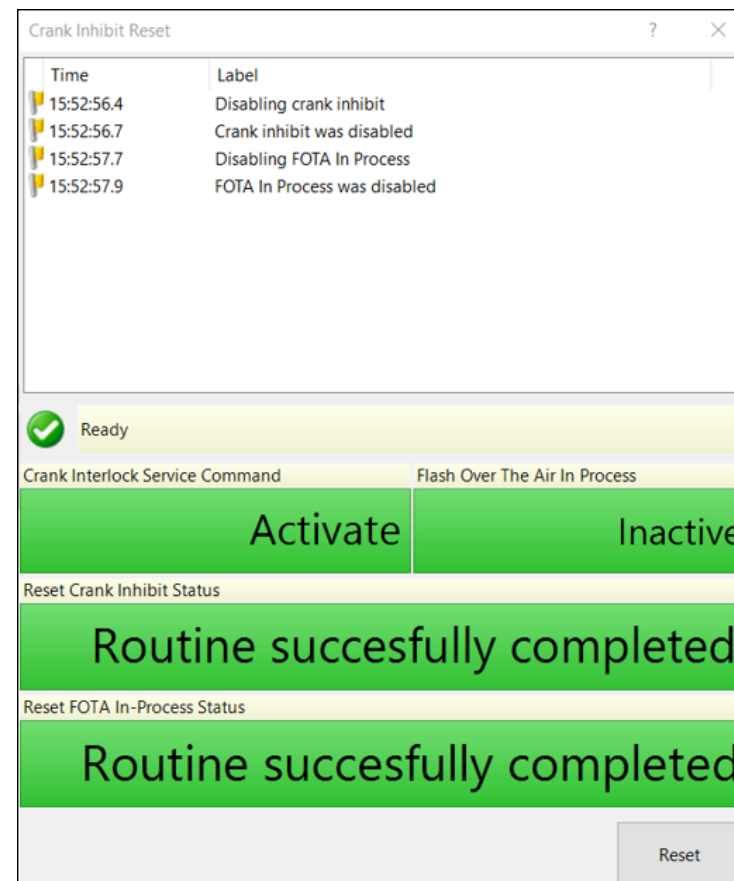
Anti-Lock Braking System Instrumentation Panel

- Anti-Lock Braking System Instrumentation panel has been added for SBSP01T.
- Brake Pedal Position and Wheel speed instruments that are not available will output as “Invalid value \$NaN” and show the value “SNA” with the instrument highlighted in red.
- Tire Circumference that are not available will output with a default value of 65.54 and show the value “SNA” with the instrument highlighted in red.
- The instruments that display SNA highlighted in red is a standard with all instrument panels.



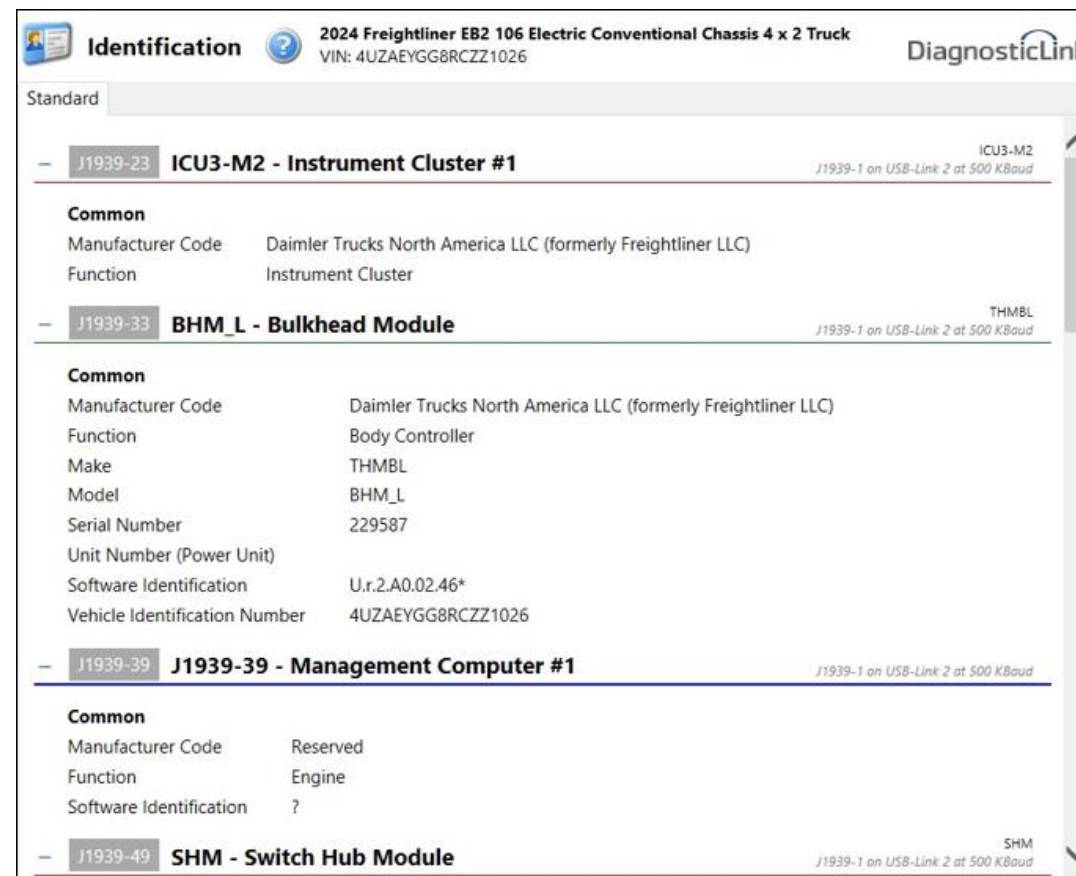
Telematics Panel Updates

- The Telematics panel has been updated to run services for CTP03T new hardware variants.
- The following services are executed when the reset button is clicked:
 - Reset Signal
FOTA_Ign_InhbtCrk_Rq Start
 - Rest Signal FOTA_InProc_Stat
Start



Initial display of DiagnosticLink may be empty

- Resolved issue where the initial display of DiagnosticLink® may be empty if the connected vehicle or fixture does not contain content assigned to the display within the 'Common' panel.
- All panels in the Identification view will now be shown or hidden according to the availability of contained content.



Identification 2024 Freightliner EB2 106 Electric Conventional Chassis 4 x 2 Truck
VIN: 4UZAEGG8RCZZ1026

Standard

J1939-23 ICU3-M2 - Instrument Cluster #1 ICU3-M2
J1939-1 on USB-Link 2 at 500 Kbaud

Common

Manufacturer Code	Daimler Trucks North America LLC (formerly Freightliner LLC)
Function	Instrument Cluster

J1939-33 BHM_L - Bulkhead Module THMBL
J1939-1 on USB-Link 2 at 500 Kbaud

Common

Manufacturer Code	Daimler Trucks North America LLC (formerly Freightliner LLC)
Function	Body Controller
Make	THMBL
Model	BHM_L
Serial Number	229587
Unit Number (Power Unit)	
Software Identification	U.r.2.A0.02.46*
Vehicle Identification Number	4UZAEGG8RCZZ1026

J1939-39 J1939-39 - Management Computer #1 J1939-1 on USB-Link 2 at 500 Kbaud

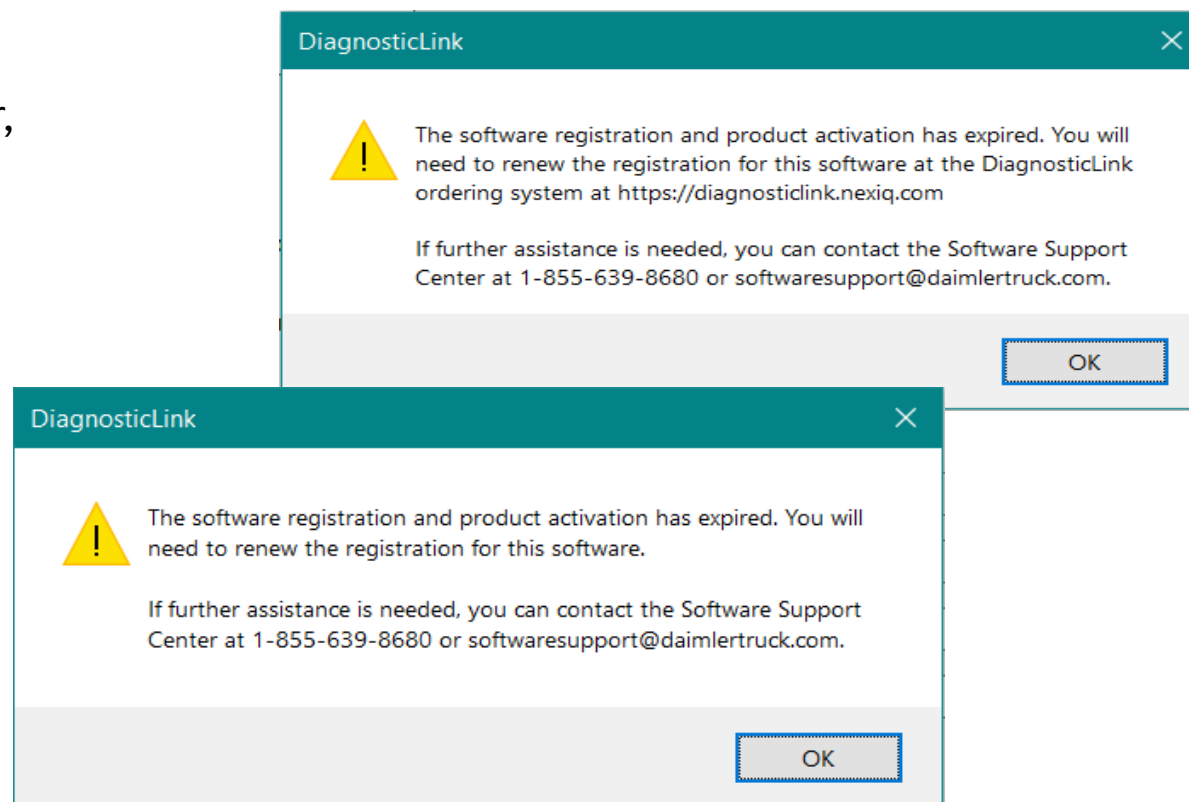
Common

Manufacturer Code	Reserved
Function	Engine
Software Identification	?

J1939-49 SHM - Switch Hub Module SHM
J1939-1 on USB-Link 2 at 500 Kbaud

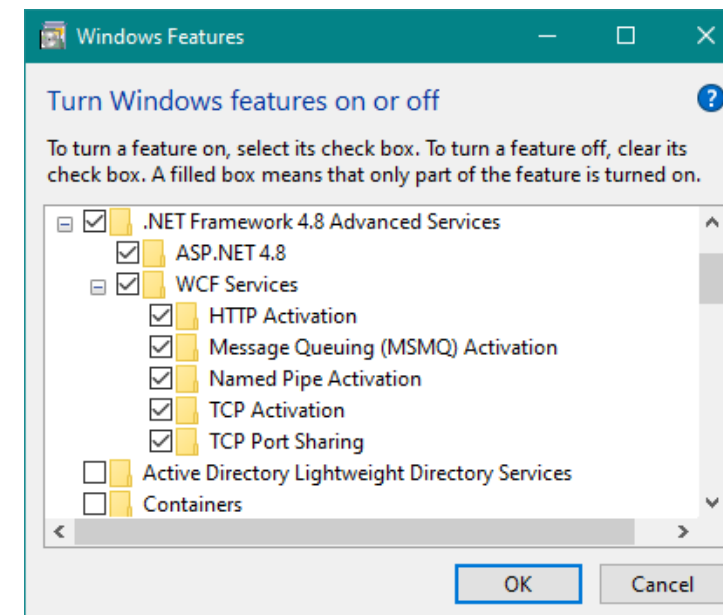
Registration message updated

- Updated the registration message to more clearly define the different scenarios (e.g., Corporate, Customer, Manufacturing use cases).



Microsoft .NET Framework 4.8 Required

- Microsoft .NET Framework 4.8 is required. Consult with your IT Administrator if needed.
- If Windows has been updated, the feature should already be installed. In rare cases, the feature may already be installed but not enabled. To enable:
 - Access the Control Panel.
 - Click Uninstall a program.
 - In the left menu, click on Turn Windows features on or off.
 - Click the (+) next to .NET Framework 4.8 to expand the session.
 - Check the options .NET Framework 4.8 advance services, ASP .NET 4.8, and WCF Services and click OK.




EV Diagnostics Update

06/6/2024

eDrive Coolant Loop Test Panel Update


- The Coolant Systems Pressure Test panel has been updated to make the diagnostics functional.
- The panel becomes available once connected to ECPC01T.
- Functionality performed for Battery Coolant Loop Test:
 - Starts battery 3X2 way valve routine
 - Sets battery circuit coolant pumps to 70%.
 - Turns on PTCs to 100%.
 - Wait until temperature is 38 deg C (100.4 deg F) or 5 mins has passed.
 - Turn off PTCs.
 - Stop the battery 3X2 way valve.
 - Set battery circuit coolant pumps to 0% when stopped.

eDrive Coolant Loop Test


Waiting until temperature reaches 50 deg C (122 deg F) or for 489 seconds.

Stop

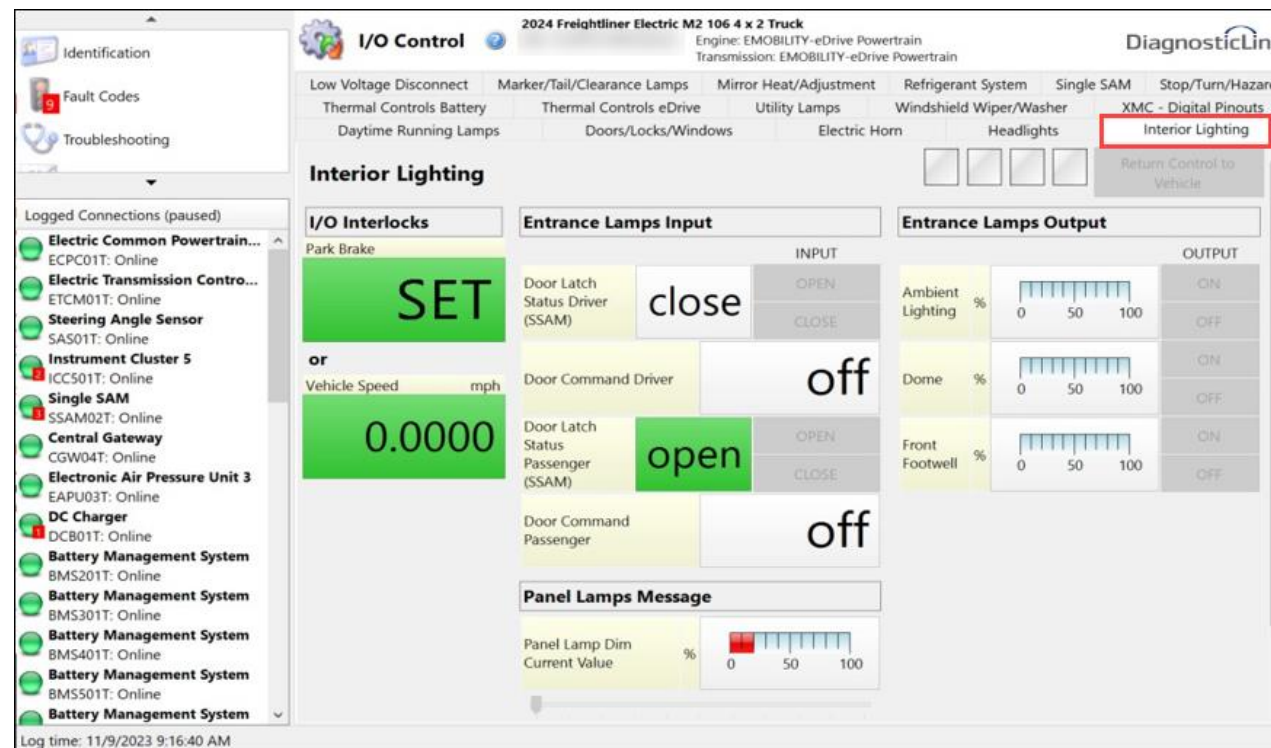
Before starting the eDrive Coolant Loop Test, turn the cab blower fan off.

HV System		ON
Fan Duty Cycle	%	0
eDrive Coolant Temperature	*F	60.00000
PTC Cab 1 Duty Cycle	%	127.5
PTC Cab 2 Duty Cycle	A	
Blower Speed (feedback from blower)	rpm	0

Time	Label
05.21.2024 12:58:11.373	EDrive Test: Set eDrive circuit coolant pumps 1 and 2 to 70% and pump 3 to 59.5%.
05.21.2024 12:58:11.542	EDrive Test: Set HVAC water pump to 100%.
05.21.2024 12:58:11.617	EDrive Test: Set heating valve to open.
05.21.2024 12:58:11.688	EDrive Test: Turning on Cab circuit PTCs.
05.21.2024 12:58:11.765	EDrive Test: Wait until temperature is 50 deg C (122 deg F) or 10 mins has passed.

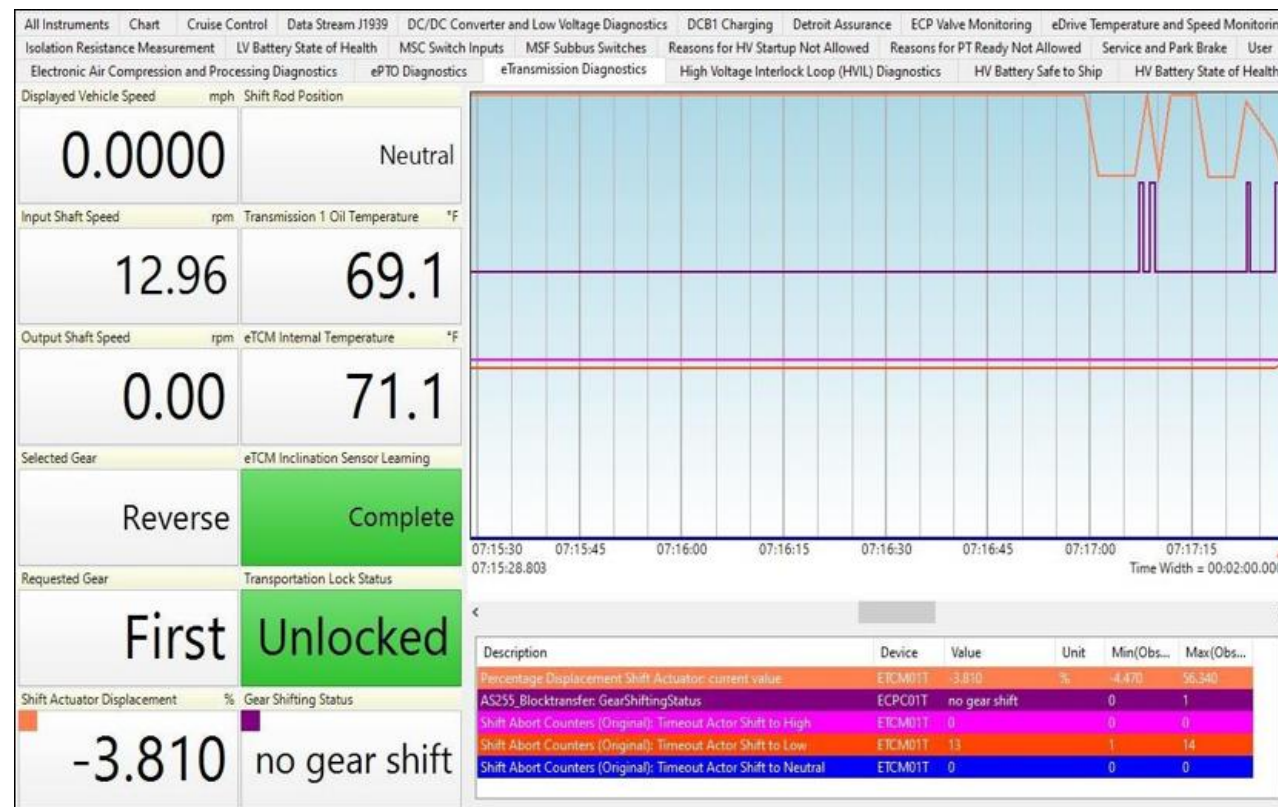
Interior Lighting (EMG) Panel Updates

- Interior Lighting (EMG) panel updated.
- The diesel version of Interior Lighting and Backlighting panels are not displayed when connected to an EMG truck.



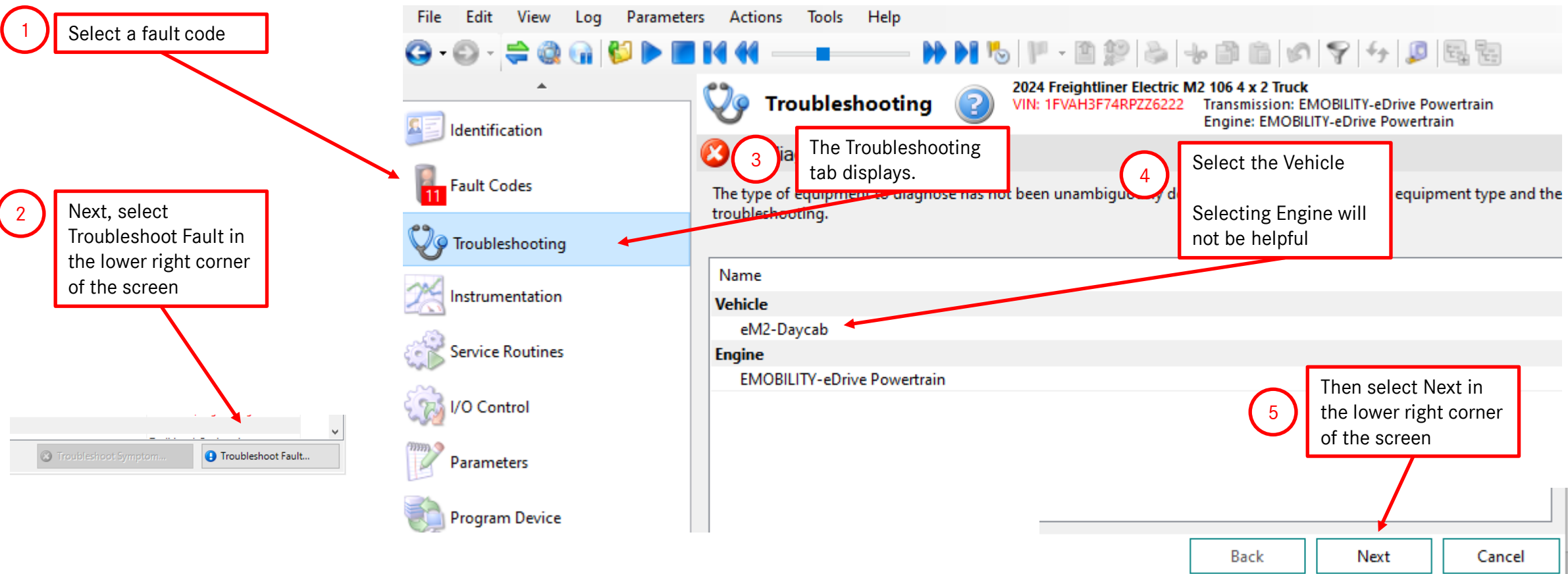
eTransmission Diagnostics Instrumentation Panel

- The Selected Gear display instrument now uses the SSAM02T MSC: Stalk Switch Driving Mode to supply its valve.
- Added the following ETCM instrument valve to the panel: 'Transportation Lock Released', 'Gear Shifting Status', and 'Shift Actuator Displacement'.
- Added the strip chart display for the instrument values for graphical interpretation.



DiganosticLink v 8.20 EMG Troubleshooting Update

- Deep Links to Fault Code Troubleshooting



The screenshot shows the DiagnosticLink v8.20 EMG Troubleshooting interface. The interface includes a menu on the left with options: Identification, Fault Codes (with a red '11' badge), Troubleshooting (highlighted in blue), Instrumentation, Service Routines, I/O Control, Parameters, and Program Device. The main window displays the 'Troubleshooting' tab for a 2024 Freightliner Electric M2 106 4 x 2 Truck (VIN: 1FVAH3F74RPZZ6222). The vehicle information section shows 'Vehicle: eM2-Daycab' and 'Engine: EMOBILITY-eDrive Powertrain'. A message at the top states: 'The type of equipment to diagnose has not been unambiguously determined by the equipment type and the troubleshooting.' At the bottom, there are 'Back', 'Next', and 'Cancel' buttons. Five numbered callouts provide instructions: 1. Select a fault code (points to the Fault Codes menu item). 2. Next, select Troubleshoot Fault in the lower right corner of the screen (points to the 'Troubleshoot Fault...' button in the bottom left). 3. The Troubleshooting tab displays. (points to the Troubleshooting tab in the main window). 4. Select the Vehicle (Selecting Engine will not be helpful) (points to the 'Vehicle' section in the main window). 5. Then select Next in the lower right corner of the screen (points to the 'Next' button at the bottom right).

DRIVING THE UPTIME REVOLUTION

DiganosticLink v 8.20 EMG Troubleshooting Update

- Deep Link to Troubleshooting material, now published on TechLit site is displayed

The screenshot shows the DiagnosticLink v8.20 EMG Troubleshooting interface. The left sidebar contains a tree view with categories: Identification, Fault Codes, Troubleshooting (selected), Instrumentation, Service Routines, I/O Control, Parameters, and Program Device. The main area displays the title 'SPN 517037/FMI 9 - ECPC01T' and a table with the following data:

Description	Chassis CAN data to the instrument cluster (ICC5); CAN timeout.
Monitored Parameter	CAN Data on Chassis CAN.
Enable Conditions	The keyswitch has been ON for more than 2 seconds.
Monitored Sequence	N/A
Execution Frequency	Continuous, when enabling conditions are met.
Typical Duration	2 seconds, latching.
HMI Indication	
Symptom	The fault will be active. The instrument panel may display incorrect information.
Verification	Completely power down the vehicle, then repower. Connect DiagnosticLink® and monitor

Below the table, there is a section for 'Logged Connections (paused)' with a list of components: Electric Common Powertrain C..., ECPC01T: Online, Electric Transmission Control ..., ETCA01T: Online, Steering Angle Sensor, SAS01T: Online, Instrument Cluster 5, ICC501T: Online, Single SAM, SSAM02T: Online, Central Gateway, CGW04T: Online, Radar Frontend 2, RDFS02T: Online, and Electronic Air Pressure Unit 3.

Continue scrolling down
for the complete
troubleshooting material

CeBID Overview

6/6/2024

CeBID = CyberSecurity Project @ DTNA (page 1)

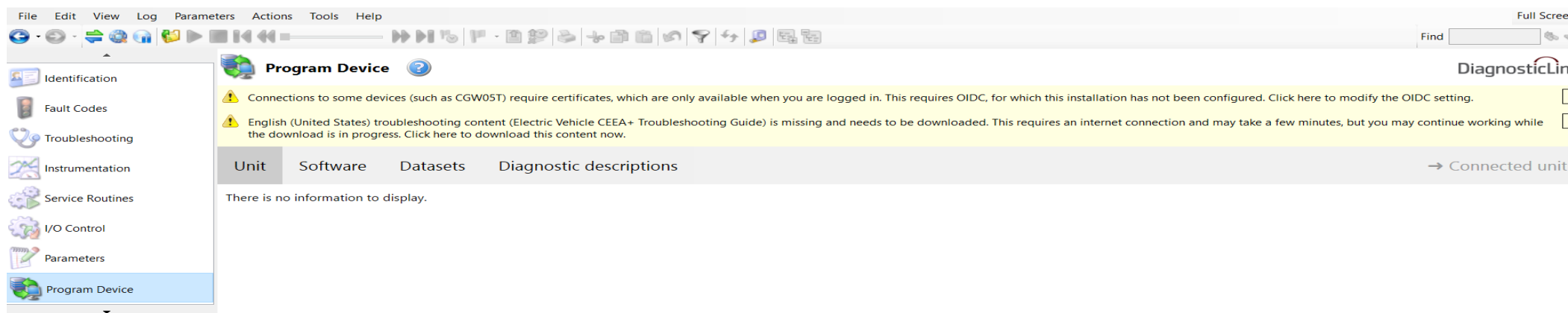
- CeBID is the project name for a complete system that protects Gen5 and future Daimler products
- Gen5 Cascadia critical ECUs will now have a layer of security to ensure neither inadvertent nor nefarious activities can not be performed on them
- DiagnosticLink requires approved Certificates from central servers to perform certain features on these protected ECUs

DiagnosticLink User Impact:

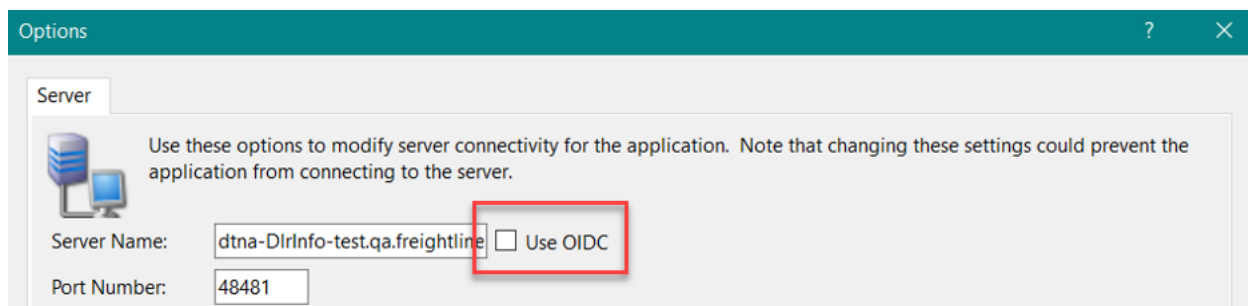
- Our role in Aftersales has been to push the technical solution so that there is minimal impact on our DiagnosticLink user base
- The server connection via OIDC authentication is required for CeBID secured products
- All current and new Single Sign On IDs, Passwords and User Roles have been (will be) ported from the current authentication system to the new OIDC system; therefore no need for Techs to learn new IDs/Passwords.
- The CeBID system is only required for new and future products starting with Gen5 Cascadia
- If **not** connecting to Gen5 Cascadia, the installed DiagnosticLink configuration will work as it does today
- If connecting to Gen5 Cascadia, the installed DiagnosticLink 8.20 configuration will need to be changed
 - An error will occur if DiagnosticLink is not configured to use OIDC (see image; page 2)
 - A new menu option is available to turn on OIDC usage when ready (see image; page 2)
 - A standard logon screen will display when required to login to obtain new/refreshed Certifications
 - It is not required to change this setting when future connections are made to pre-Gen5 Cascadia

CeBID = CyberSecurity Project @ DTNA (page 2)

- DiagnosticLink error when connecting to Gen5 Cascadia ECUs without having Certifications: (Error Text: Connections to some devices (such as CGW05T) requires certificates; which are only available when you are logged in. This requires OIDC for which this installation has not been configured. Click here to modify the OIDC setting)



- To turn on OIDC, check the option “Use OIDC” checkbox at menu: Tools→Options →Server
- Only required to do once per installation and when first connecting to Gen5 Cascadia



Thank you

6/6/2024