



DiagnosticLink 8.21 Features

Service Diagnostics & Tools

12/9/2024

DAIMLER TRUCK
North America

DiagnosticLink® 8.21 Improvements

- The OIDC SiteMinder login has been set as the backend server login for the DiagnosticLink® application.
- ECU programming is blocked if EDEX-persist server is unavailable.
- Legacy DDEC Reprogramming Software (DRS) ServiceBench Application Error.
- System requirement update (TCP Port 443).
- Nexiq USB-Link Updates.

DiagnosticLink® 8.21 New Panels and Features

- Fifth Generation Cascadia vehicle support:
 - Support added for CEEAce Auto config Job.
 - Support added for special enhanced rights implementation for allowing the VIN write for Central Gateway (CGW05T).
 - Support added for special enhanced rights implementation for allowing the Diagnostic Firewall Config Parameter write for CGW05T.
 - CTP initialization support added for CTP3 and CTP02T.
 - SBSP activation panel support added.
 - Air dryer cartridge replacement reset button is greyed out for Fifth Generation Cascadia.

- AP4 (Autonomous) vehicle support:
 - I/O control updates added for AP4 Doors/Locks panel.

- Support added for new panels:
 - FSC Logic Block Viewer panel for TEM users.
 - CARB Clean Truck Check verification for OBD requirements.
 - Rear Doors, Locks, and Windows panel



DiagnosticLink® 8.21 FCCC-School Bus Panels

- Support added for VCU03T controller.
- Added new VCU03T diagnostic panels:
 - Battery panel
 - Battery Thermal Management panel
 - VFD panel
 - Battery Contractor panel
 - Air Compressor panel
 - Cab Thermal Management panel
 - Charging panel
 - Power Steering panel

CeBID Overview

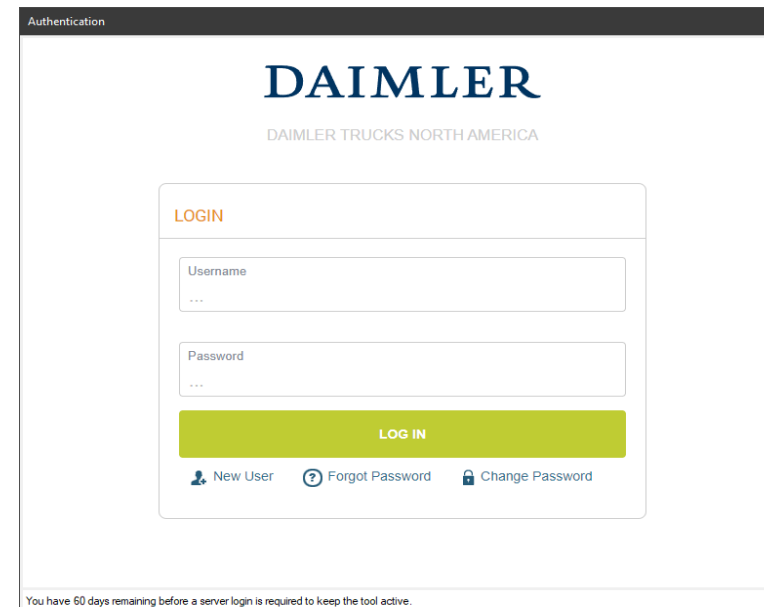
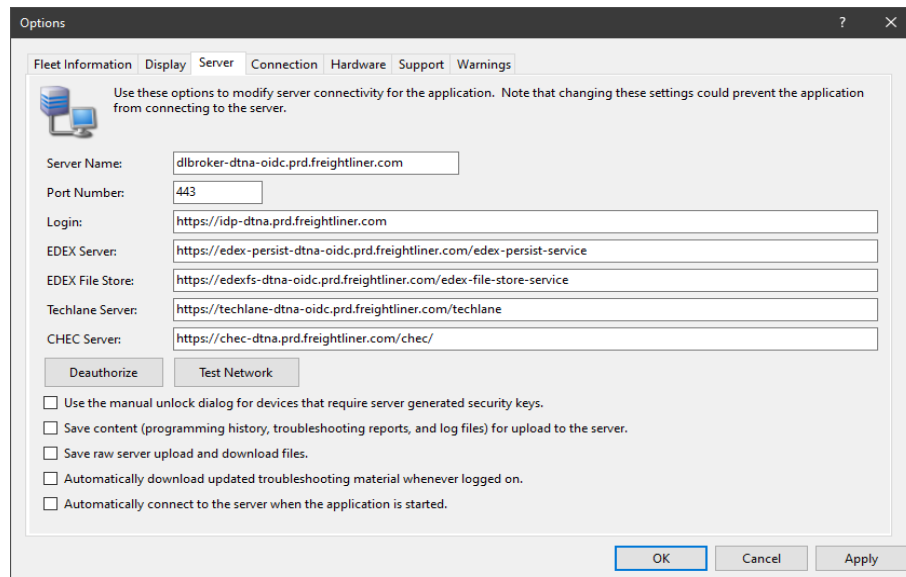
- CyberSecurity Project @ DTNA :
 - CeBID explained.
 - DiagnosticLink User Impact.
 - Required certificate downloads.
 - ZenZefi DL logon indicator.
 - OIDC CIAM dual login requirement.

Improvements and Enhancements

12/9/2024

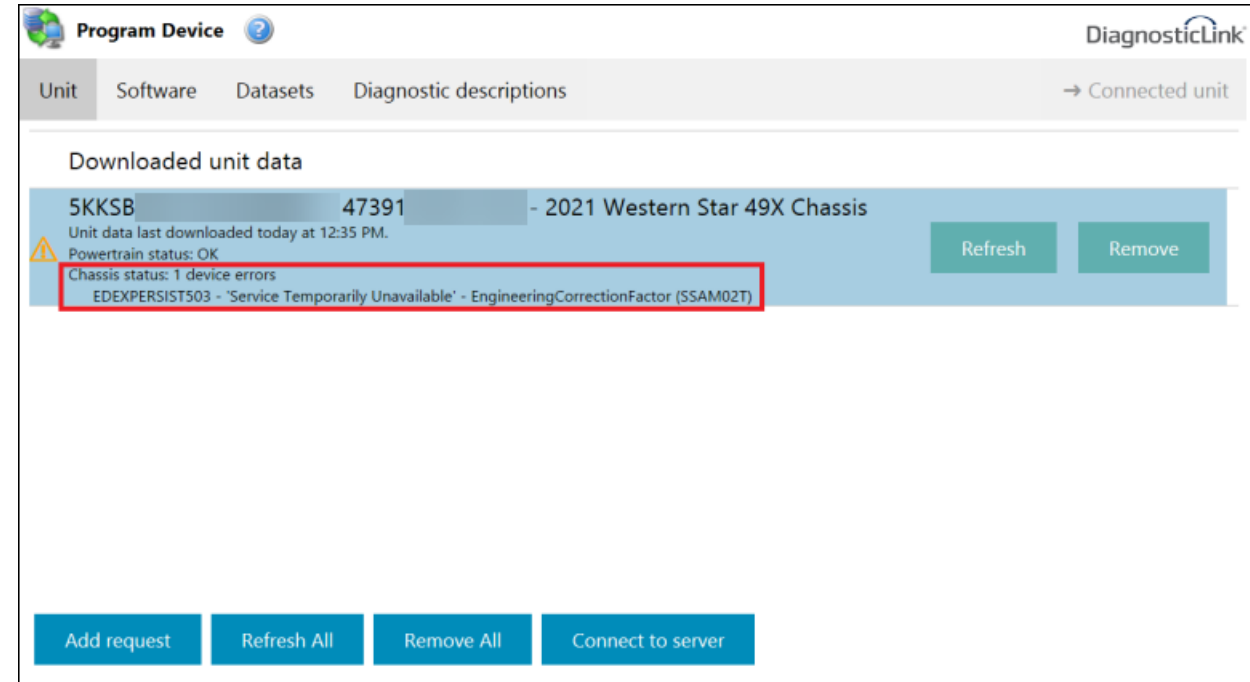
Make OIDC the login for DL application and remove the SiteMinder login

- The ability to log in using SiteMinder has been removed.
- OIDC is the official log in method
- The Use OIDC check box has been removed from Server Options.



Failed Engineering Correction Factor download is ignored

- The DL-Broker system does not deliver the complete set of data needed to program the SSAM02T.
- DiagnosticLink is required to establish a separate connection to EDEX-persist to retrieve Engineering Correction Factor (ECF) data.
- Where the server was unavailable or incorrectly responding, the situation was ignored. This meant DiagnosticLink could incorrectly program an ECU.
- To avoid this, ECU programming is now blocked if the EDEX-persist server is not responding correctly.



The screenshot shows the 'Program Device' interface in DiagnosticLink. The 'Unit' tab is selected, displaying 'Downloaded unit data' for unit 5KKSB 47391, a 2021 Western Star 49X Chassis. The unit data was last downloaded at 12:35 PM. The powertrain status is OK, but the chassis status shows 1 device error: 'EDEXPERSIST503 - 'Service Temporarily Unavailable' - EngineeringCorrectionFactor (SSAM02T)'. A red box highlights this error message. The interface includes buttons for 'Refresh' and 'Remove' for the unit, and a bottom bar with 'Add request', 'Refresh All', 'Remove All', and 'Connect to server'.

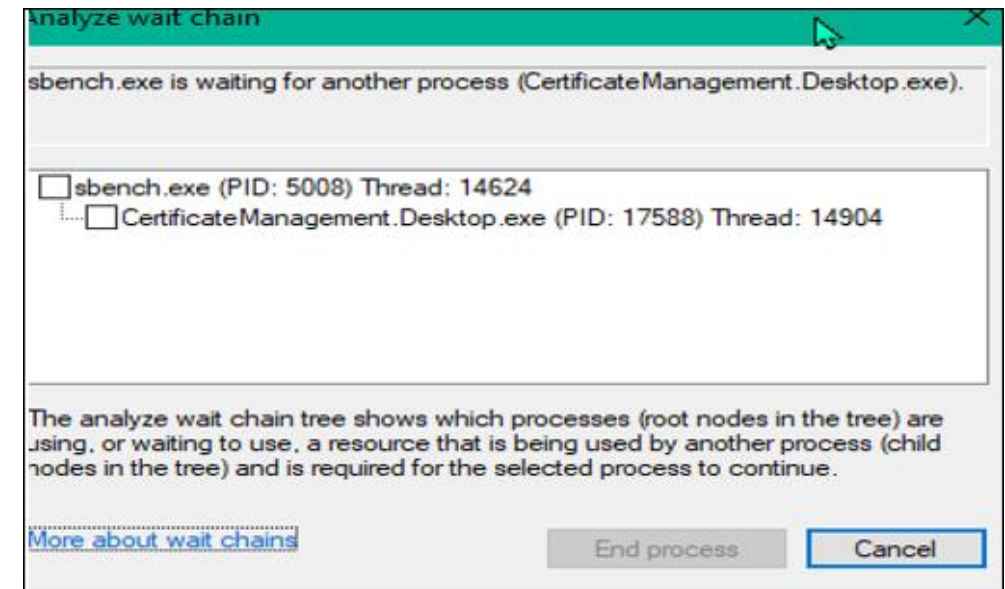
DRS ServiceBench Application Error

When attempting to 'Update Customer Calibration', DRS may freeze resulting in a '*ServiceBench Application not Responding*' error. As a workaround, end the conflicting process via Task Manager.

1. Press **Ctrl-Alt-Delete**.
2. Select Task Manager.
3. From the Task Manager, click '**ServiceBench Application (32-bit)**'.
4. Click 'Go to detail'.
5. The sebench.exe process details will be displayed. Click sebench.exe.
6. Click '**Analyze wait chain**'.
7. Check the box for the process *below* the sebench.exe process (Do Not check the box for sebench.exe).
8. Click **End Process** and close the Task Manager. DRS should now function.

Source:

https://dtnacontent-dtna.prd.freightliner.com/content/public/dtnaportalpublic/DetroitTools/ServiceDiagnostics_Tools/DRS0.html



System Requirement Update

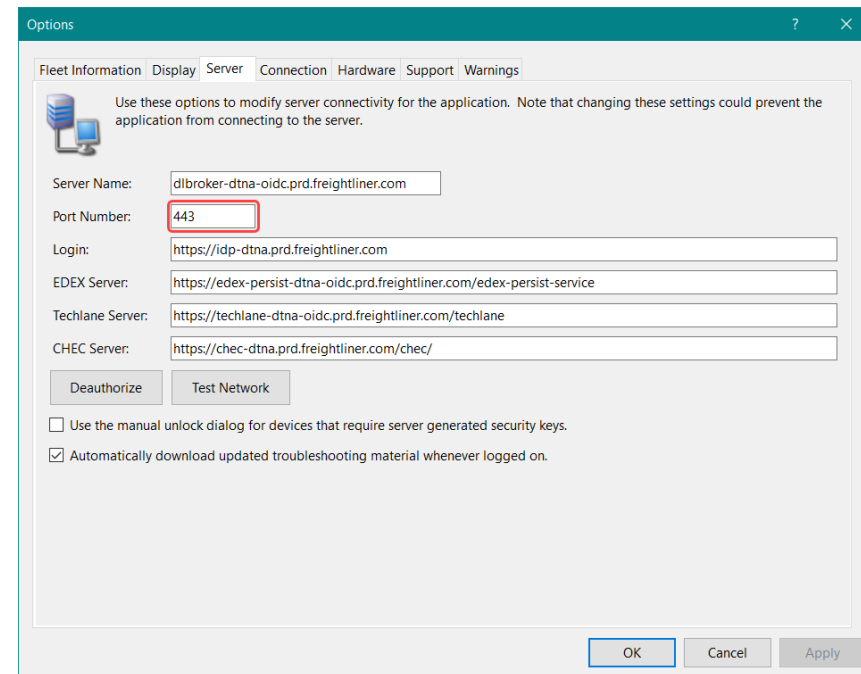
- Starting with DiagnosticLink 8.21, IT security firewall access will be required for **TCP port 443**.
- DiagnosticLink version 8.20 and earlier requires access to TCP port 48481.

SYSTEM REQUIREMENTS

- Windows 10/11 (64 bit)
- 2.0 GHz Dual Core Processor or faster
- 4.0 GB RAM or more
- 100 GB Hard drive with 20 GB free
- Monitor and graphics card supporting 1366x768 resolution
- 1 free USB
- High Speed or Broadband Internet connection (typically 10Mbps or faster)
- IT Security Firewall Access for TCP Port 48481 (DiagnosticLink v8.20)
- **IT Security Firewall Access for TCP Port 443 (DiagnosticLink v8.21 or later)**
- Administrative Rights (for installation only)
- An RP1210 compatible vehicle interface device
- Microsoft .NET Framework 4.8 or later (starting with DiagnosticLink 8.20)

Source:

https://dtnacontent-dtna.prd.freightliner.com/content/public/dtnaportalpublic/DetroitTools/ServiceDiagnostics_Tools/DiagnosticLink.html



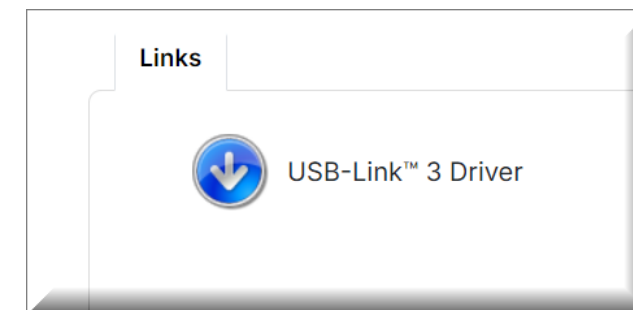
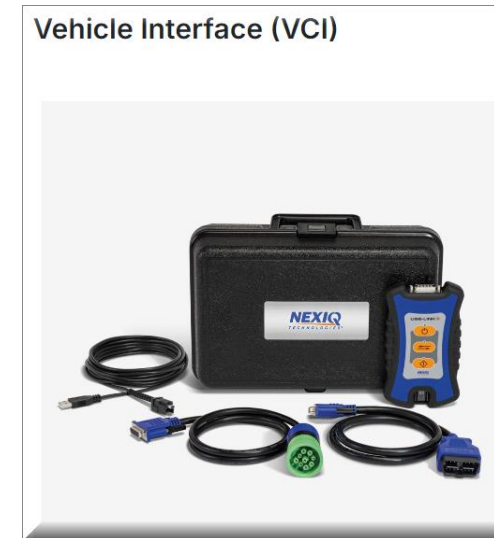
The screenshot shows the 'Options' dialog box with the 'Server' tab selected. The 'Port Number' field is set to 443 and is highlighted with a red box. Other fields include Server Name, Login, EDEX Server, Techlane Server, and CHEC Server. There are also buttons for 'Deauthorize' and 'Test Network', and checkboxes for 'Use the manual unlock dialog for devices that require server generated security keys' and 'Automatically download updated troubleshooting material whenever logged on'.

Nexiq USB-Link Updates

- An issue was reported where the USB-Link 3 connection may drop. Device driver **3.2.13 (firmware 17145)** resolved the concern. The Nexiq site will be updated with the latest driver.
- The Nexiq site was redesigned. The device drivers can now be found under the Products tab. To locate, click **Products > Vehicle Interface (VCI)** and select the appropriate product (e.g., *USB-Link 3 wired or wireless*). Scroll down to the bottom of the page for the driver download link.

Source:

https://nexiq.com/Shopping/Product_GEX.aspx?ProductNumber=NQ121054

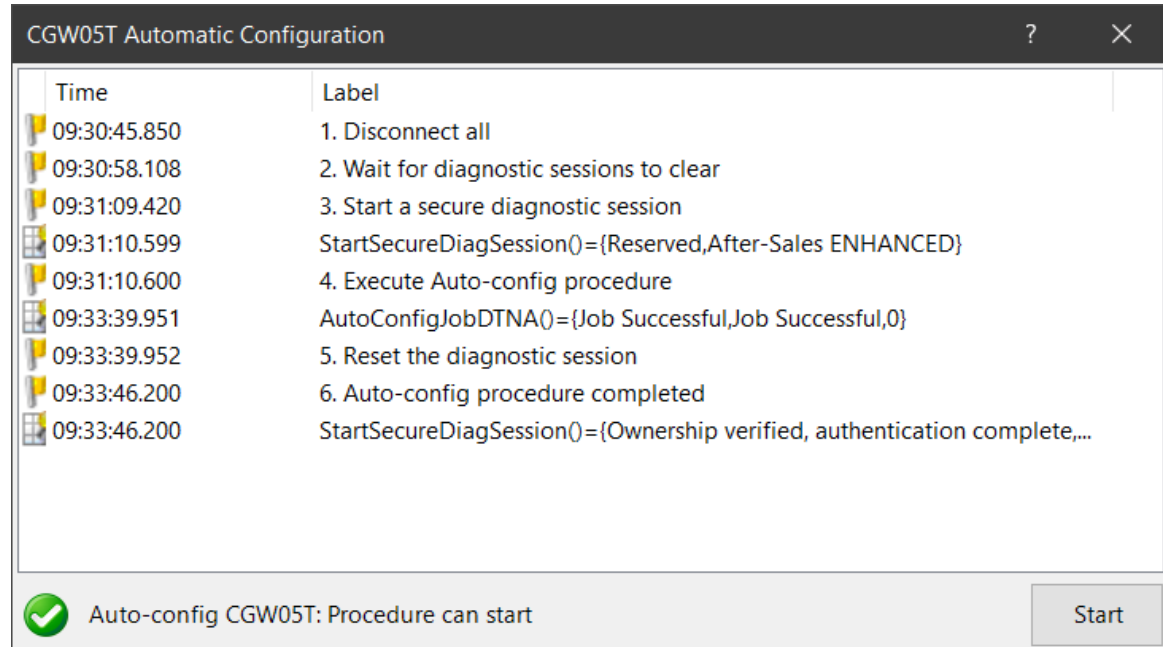


Fifth Generation Cascadia New Panels and Features

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CEEAce Auto Config Job

- The auto-config functions implemented in ICUC/ICC5 for CEEA+ do not function in CEEAce.
- ODX java diag jobs have been created for CGWce, ICUC, and ICC5.
- This panel is used to execute the CGW05T Auto-config procedure.



CGW05T Automatic Configuration

Time	Label
09:30:45.850	1. Disconnect all
09:30:58.108	2. Wait for diagnostic sessions to clear
09:31:09.420	3. Start a secure diagnostic session
09:31:10.599	StartSecureDiagSession()={Reserved,After-Sales ENHANCED}
09:31:10.600	4. Execute Auto-config procedure
09:33:39.951	AutoConfigJobDTNA()={Job Successful,Job Successful,0}
09:33:39.952	5. Reset the diagnostic session
09:33:46.200	6. Auto-config procedure completed
09:33:46.200	StartSecureDiagSession()={Ownership verified, authentication complete,...

 Auto-config CGW05T: Procedure can start Start

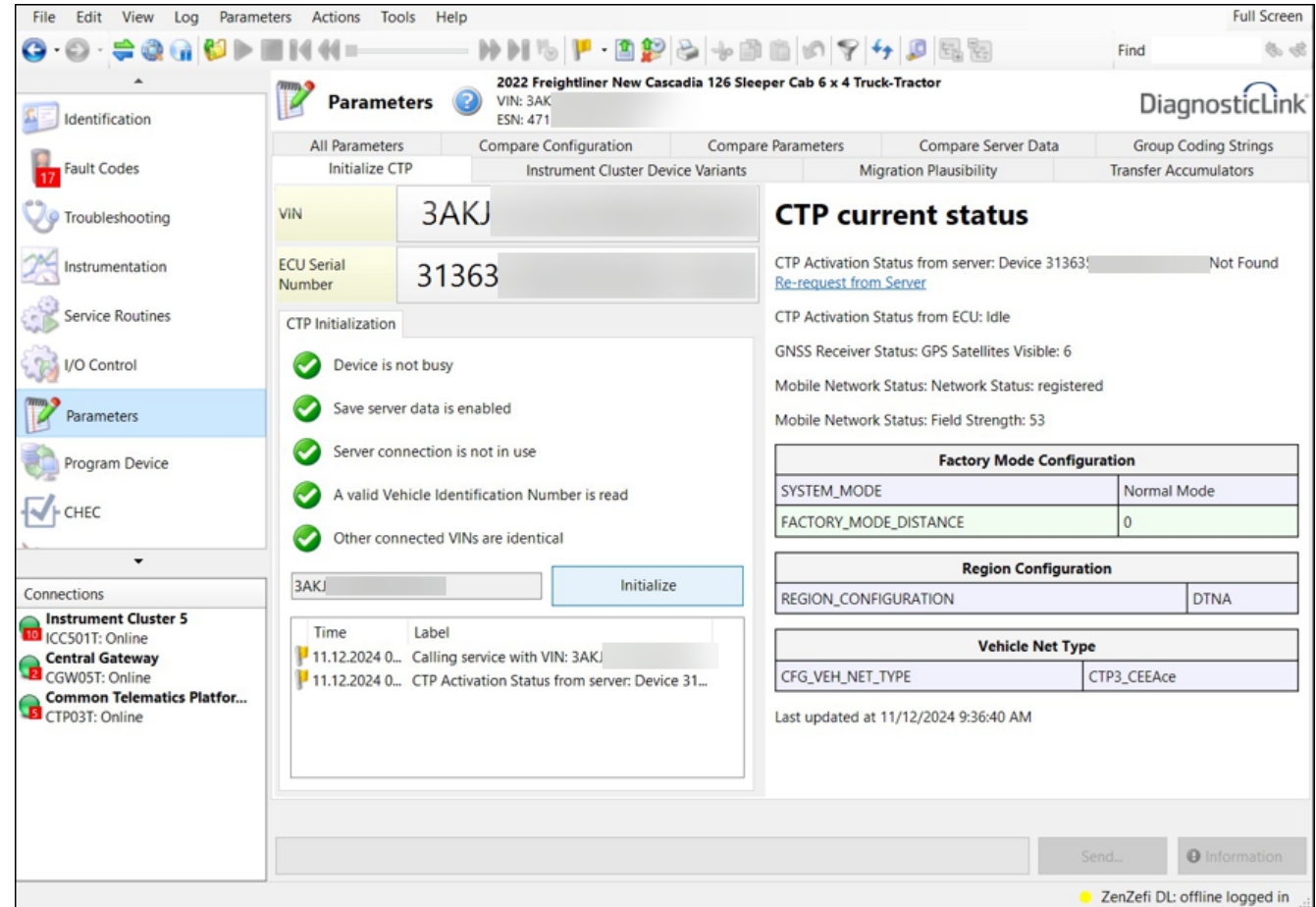
Special Enhanced Rights Implementation

Fifth Generation Cascadia vehicle support now includes an update for special enhanced rights to support the following activities for Central Gateway (CGW05T):

- Allow the VIN write.
- Allow the Diagnostic Firewall Config Parameter write.

CTP Initialize Panel for CTP3 and CTP02T

- Initialize CTP panel updated to support CTP02T and CTP03T.
- Since RDA status and RDA jobs are not applicable to CTP02T and CTP03T, the following will be displayed:
 - GPS Satellites Visible
 - Network Status
 - Field Strength
 - Factory Mode Configuration
 - Region Configuration
 - Vehicle Net Type



Parameters 2022 Freightliner New Cascadia 126 Sleeper Cab 6 x 4 Truck-Tractor
VIN: 3AKJ ESN: 471

Initialize CTP Instrument Cluster Device Variants Migration Plausibility Transfer Accumulators

VIN: 3AKJ
ECU Serial Number: 31363

CTP Initialization

- ✓ Device is not busy
- ✓ Save server data is enabled
- ✓ Server connection is not in use
- ✓ A valid Vehicle Identification Number is read
- ✓ Other connected VINs are identical

3AKJ Initialize

Time	Label
11.12.2024 0...	Calling service with VIN: 3AKJ
11.12.2024 0...	CTP Activation Status from server: Device 31...

CTP current status

CTP Activation Status from server: Device 31363: Not Found
[Re-request from Server](#)

CTP Activation Status from ECU: Idle

GNSS Receiver Status: GPS Satellites Visible: 6

Mobile Network Status: Network Status: registered

Mobile Network Status: Field Strength: 53

Factory Mode Configuration	
SYSTEM_MODE	Normal Mode
FACTORY_MODE_DISTANCE	0

Region Configuration	
REGION_CONFIGURATION	DTNA

Vehicle Net Type	
CFG_VEH_NET_TYPE	CTP3_CEEAce

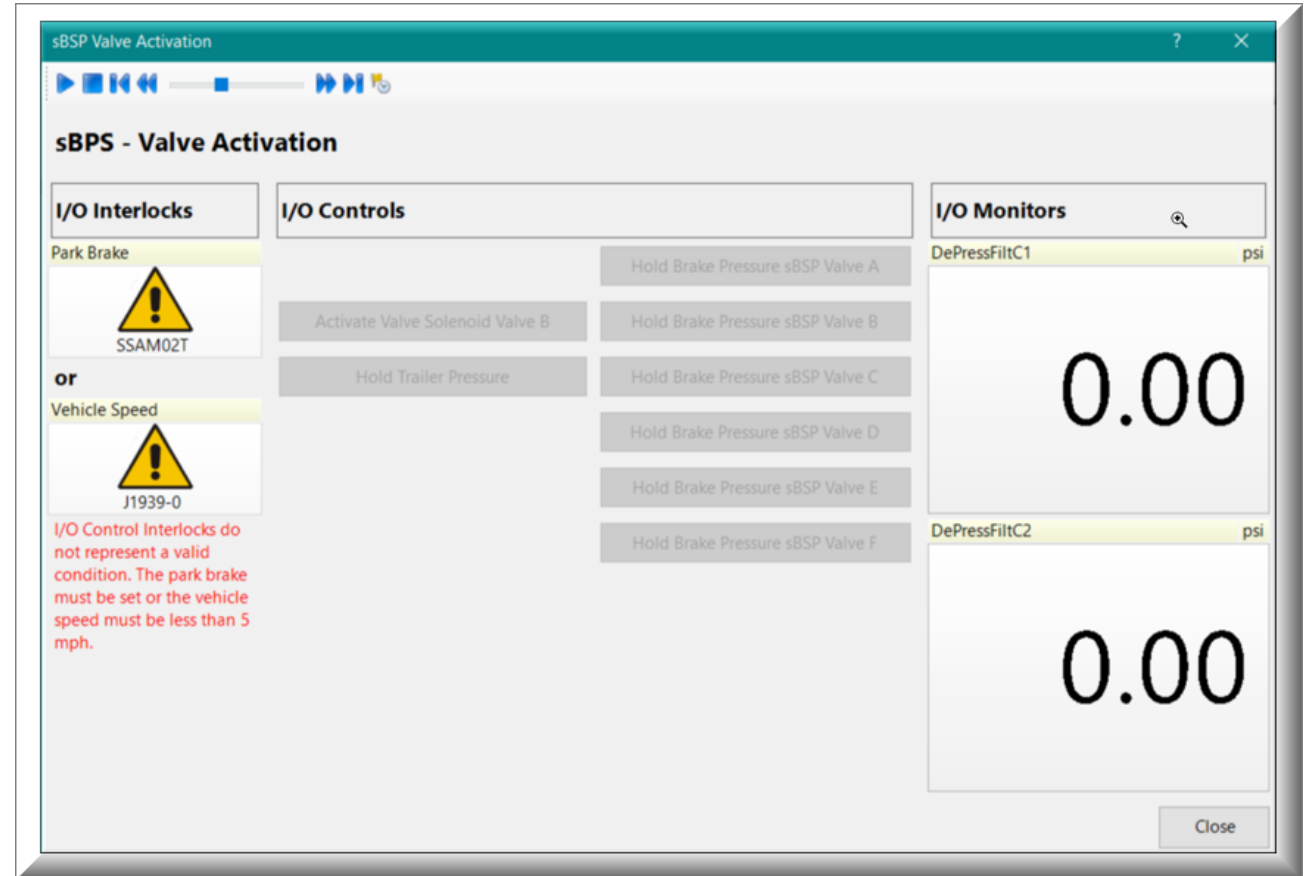
Last updated at 11/12/2024 9:36:40 AM

Send... Information

ZenZefi DL: offline logged in

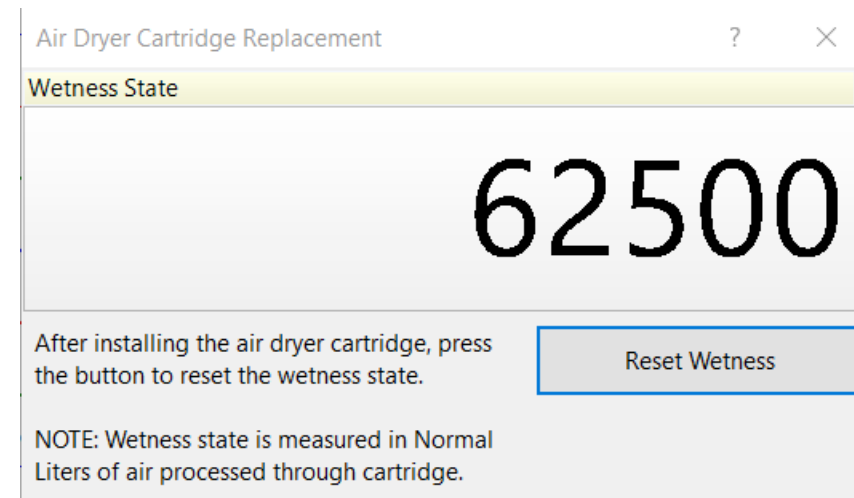
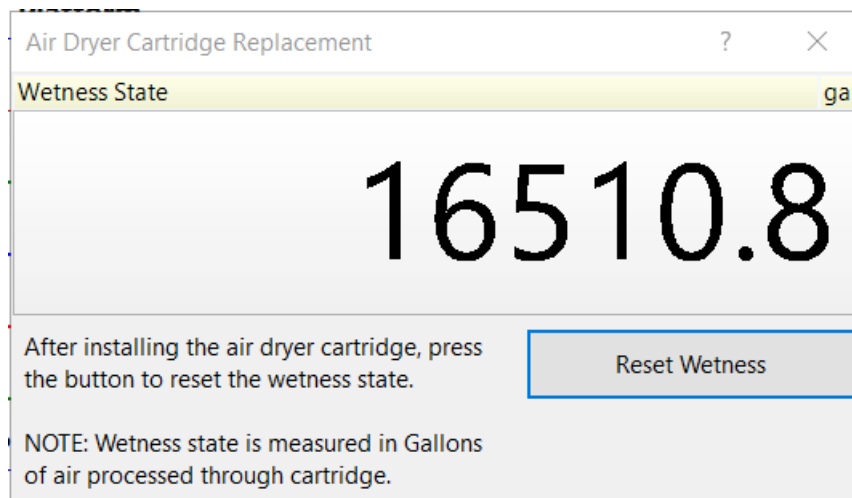
SBSP Activation Panel

- SBSP activation panel can be used to activate the valve for diagnostics.



Air Dryer Cartridge Replacement Reset button is greyed out for Fifth Generation Cascadia

- This panel was updated to re-map the Reset Wetness service qualifier and Wetness State instrument qualifier for SATP01T ECU.
- The label was updated based on the unit conversion selected which represents the following:
 - Wetness state is measured in Gallons of air processed through cartridge if US units is selected.
 - Wetness state is measured in Normal Liters of air processed through cartridge if Metric units is selected.

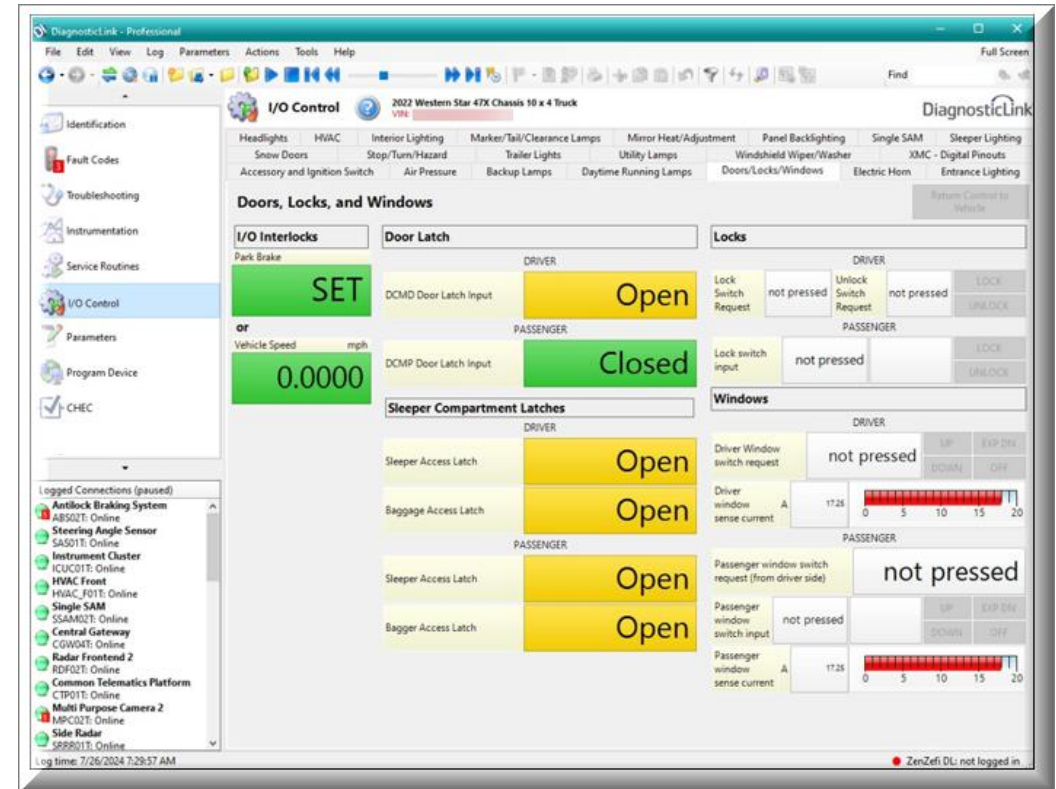


AP4 (Autonomous) Input Output Control Panel

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AP4 Doors, Locks, and Windows I/O Control Panel

- The AP4 has baggage and sleeper door access open and closed detection which will be wired to the XMC.
- These new instruments have been added to the existing Doors/Locks/Windows IO panel under the heading Sleeper Compartment Latches.
- The new instruments are displayed only when they are supported.





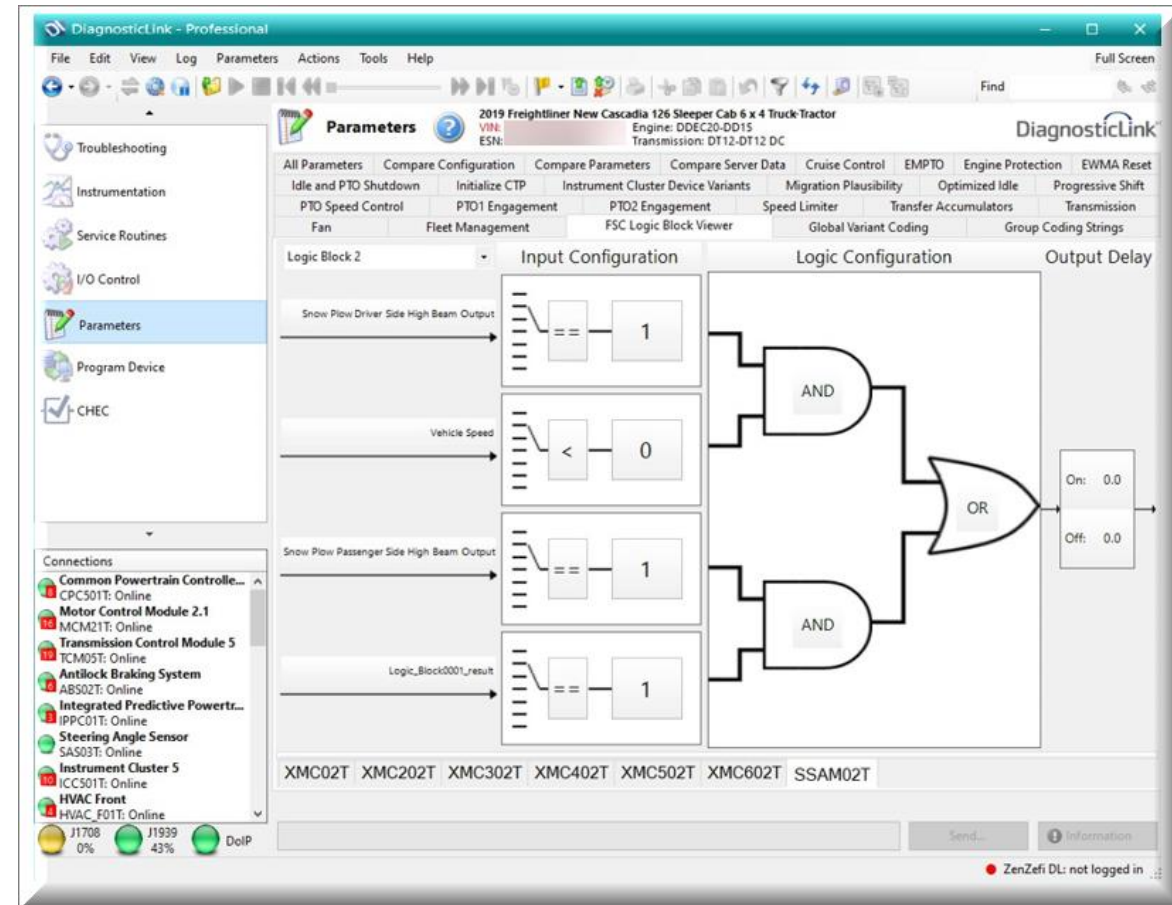
New Panels and Features

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FSC Logic Block Viewer Panel

- Displays the current FSC logic parameterization per block in a logic gate format.
- The tabs update dynamically based on the connected devices.
- After selecting a device tab, choose the logic block to view using the dropdown.



CARB Clean Truck Check for Trucks Supporting MY13 OBD Requirements (CPC04T onwards)

- Rename 'Periodic CARB Smoke Inspection Program OBD Data Report' to 'Non-Certified CARB Health Check'
- Only show for CPC04T or newer

Non-Certified CARB Health Check

Monday, October 7, 2024 12:13:02 PM

- Identification

- J1939-61

DM	SPN	Name	Value
19	1635[0]	Calibration Identification Number	3Atz
19	1634[0]	Calibration Verification Number	5898
	237	Vehicle Identification Number	
	588	Engine Serial Number	

- J1939-1

DM	SPN	Name	Value
19	1635[0]	Calibration Identification Number	4J4
19	1634[0]	Calibration Verification Number	7FF
	237	Vehicle Identification Number	
	588	Engine Serial Number	

- J1939-0

DM	SPN	Name	Value
19	1635[0]	Calibration Identification Number	5T243
19	1634[0]	Calibration Verification Number	26D
	237	Vehicle Identification Number	
	588	Engine Serial Number	

- Diagnostic Readiness

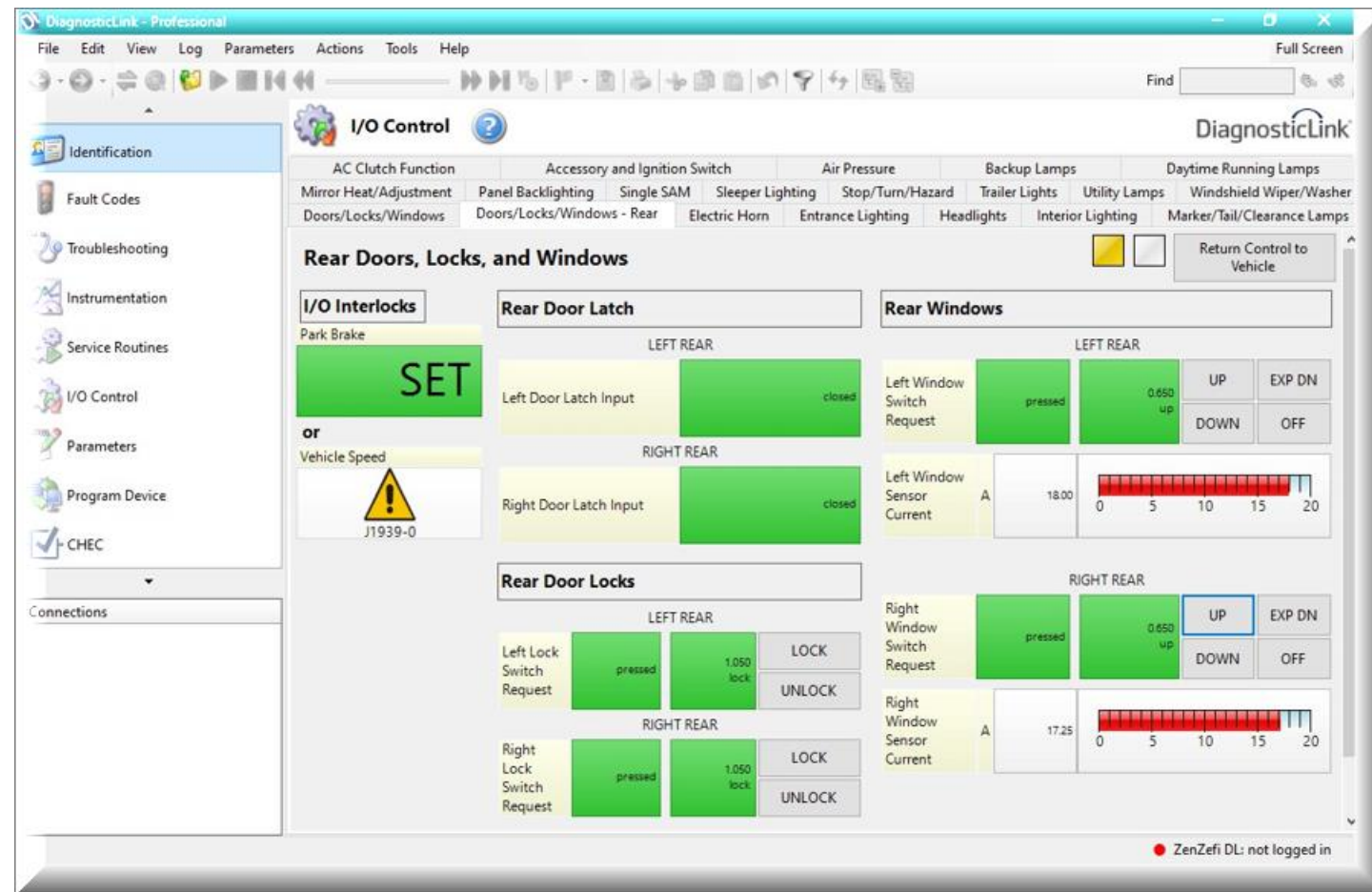
- J1939-61

DM	SPN	Name	Value	Units

Export... OK

Rear Doors, Locks, and Windows panel

- Supports the rear door control modules, DCMDR01T and DCMPR01T, of four-door cabs
- The panel emphasizes that this is for the rear doors, so it is not confused with the *front* Doors, Locks, and Windows panel.
- The title and section titles start with the word Rear
- The Driver and Passenger doors are referred to as the Left and Right doors





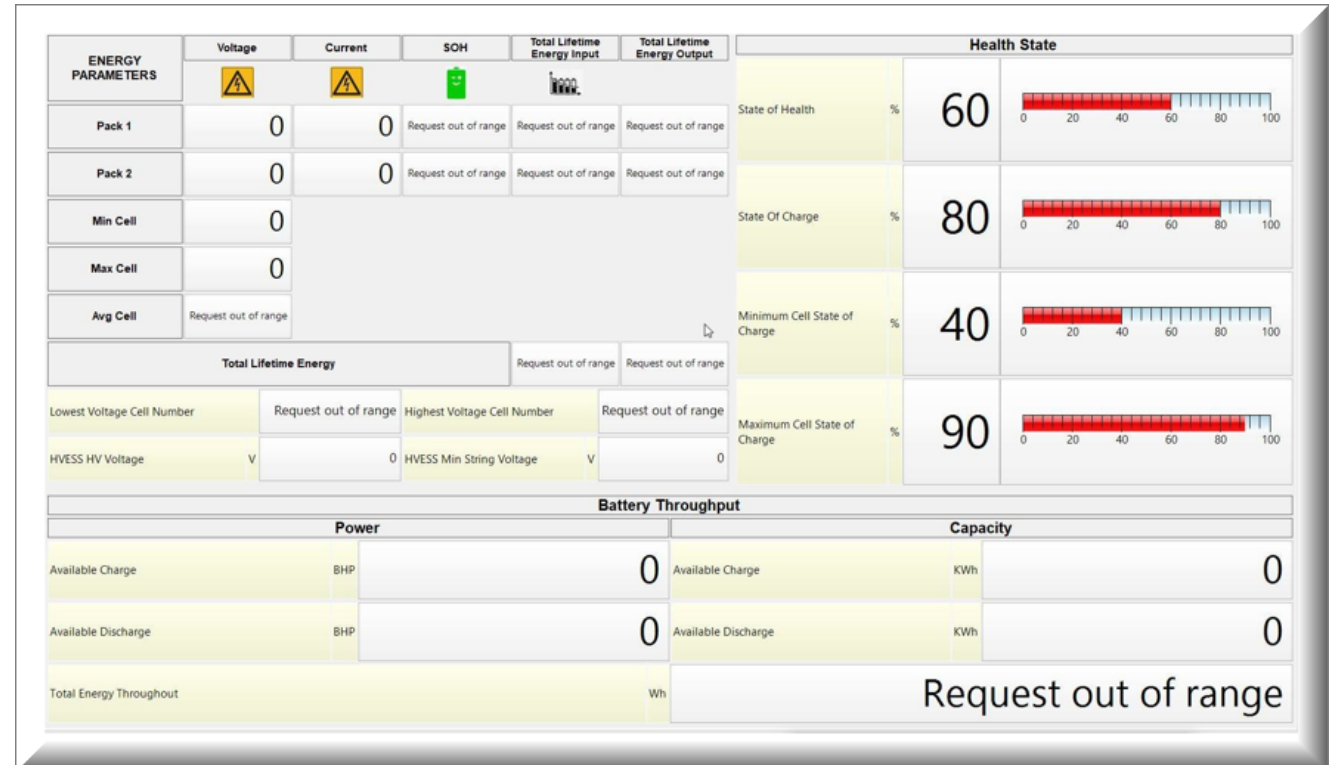
FCCC-School Bus (EB2 Gen2) New Panels

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Battery Panel

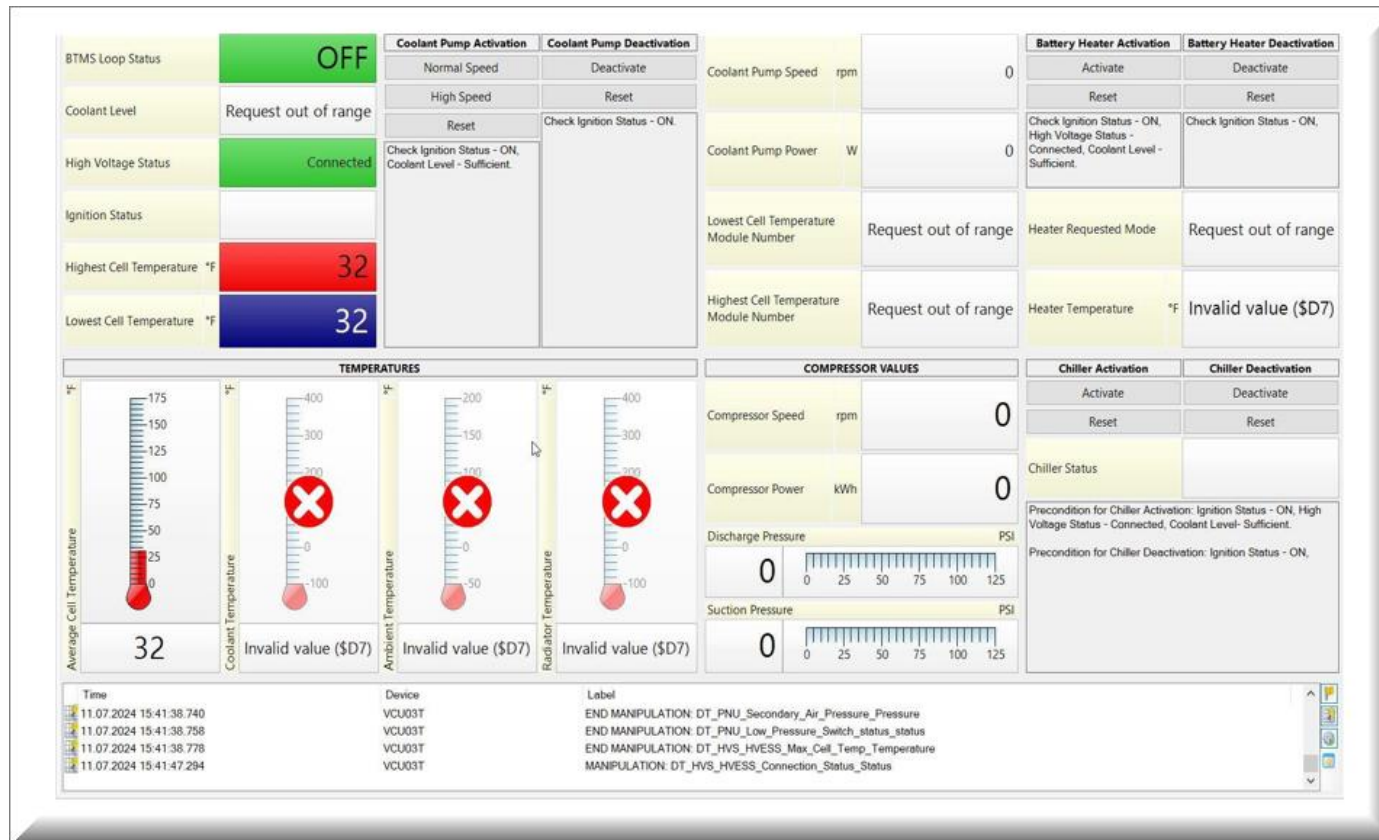
- The battery panel gives a quick view on the Battery Health and State of Charge of the batteries. Pack wise information pertaining to Charge & Capacity is also detailed out.



Battery Thermal Management Panel

DRIVING THE UPTIME REVOLUTION

- Provides the parameters related to heating/cooling for the HV batteries to maintain them at desired operating temperatures.



The screenshot displays the Battery Thermal Management Panel interface, which is organized into several functional sections:

- Status Indicators:**
 - BTMS Loop Status:** OFF (Green background)
 - Coolant Level:** Request out of range (Yellow background)
 - High Voltage Status:** Connected (Green background)
 - Ignition Status:** (White background)
 - Highest Cell Temperature *F:** 32 (Red background)
 - Lowest Cell Temperature *F:** 32 (Blue background)
- Control Panels:**
 - Coolant Pump Activation:** Normal Speed, High Speed, and a Reset button.
 - Coolant Pump Deactivation:** Deactivate and a Reset button.
 - Battery Heater Activation:** Activate and a Reset button.
 - Battery Heater Deactivation:** Deactivate and a Reset button.
 - Chiller Activation:** Activate and a Reset button.
 - Chiller Deactivation:** Deactivate and a Reset button.
- Readouts and Gauges:**
 - Coolant Pump Speed:** rpm, 0
 - Coolant Pump Power:** W, 0
 - Lowest Cell Temperature Module Number:** Request out of range
 - Highest Cell Temperature Module Number:** Request out of range
 - Compressor Speed:** rpm, 0
 - Compressor Power:** kWh, 0
 - Discharge Pressure:** PSI, 0
 - Suction Pressure:** PSI, 0
 - TEMPERATURES:** Four vertical gauges for Average Cell Temperature (32), Coolant Temperature (Invalid value (\$D7)), Ambient Temperature (Invalid value (\$D7)), and Radiator Temperature (Invalid value (\$D7)).
- Log/History:** A table at the bottom showing Time, Device (VCU03T), and Label (e.g., END MANIPULATION: DT_PNU_Secondary_Air_Pressure_Pressure).

VFD Panel

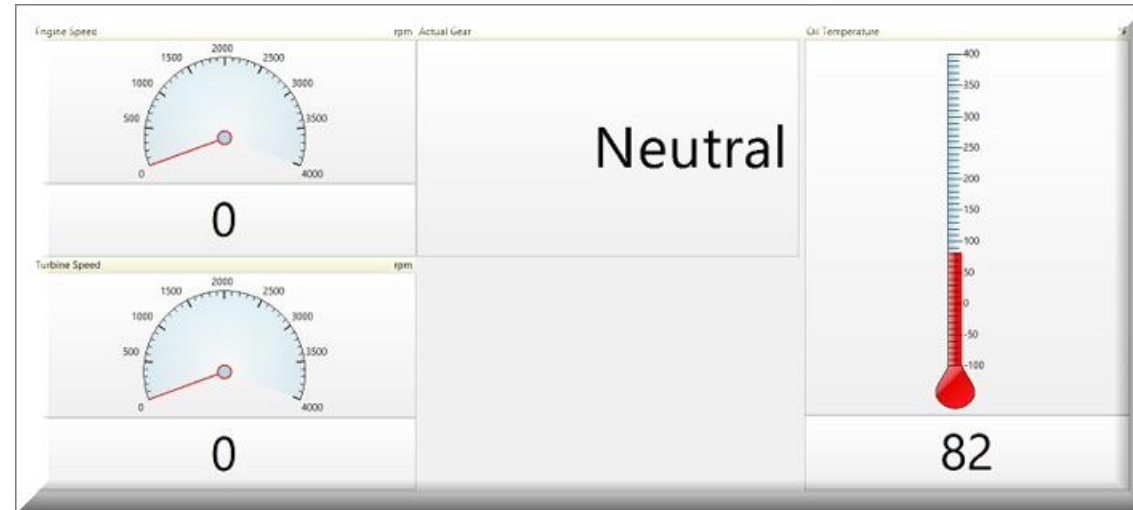
- Details out the parameters connected with VFD1/ VFD 2 & VFD 3. VFD Error & Lamp status along with the output current & voltages are detailed out.

Vehicle HV/L Status	Closed	High Voltage Status	Connected	Ignition Status	
VFD1 DC/DC		VFD2 DC/DC		VFD3 DC/AC	
Output Voltage	V 0	Output Voltage	V 0	Output Current	A 0
Output Current	A 0	Output Current	A 0	VFD3 System Status	Ready
VFD1 Error Lamp Status	OFF	VFD2 Error Lamp Status	OFF		
VFD1 Device Status	Completed	PSU2 Error Status	No Error		
PSU1 Inverter Status	DC Output Inhibited	DCU2 Error Status	No Errors		
PSU1 Error Status	No errors	DCU2 Ready Status	Ready for Operation		
VFD1 Error Status	No Error	DCU2 Inverter Status	Error LED ON		
DCU1 Error Status	No Errors	VFD2 Device Status	Completed		
		PSU2 Inverter Status	DC Output Not Inhibited		
		VFD2 Error Status	No Error		

Torque Converter signals monitoring panel

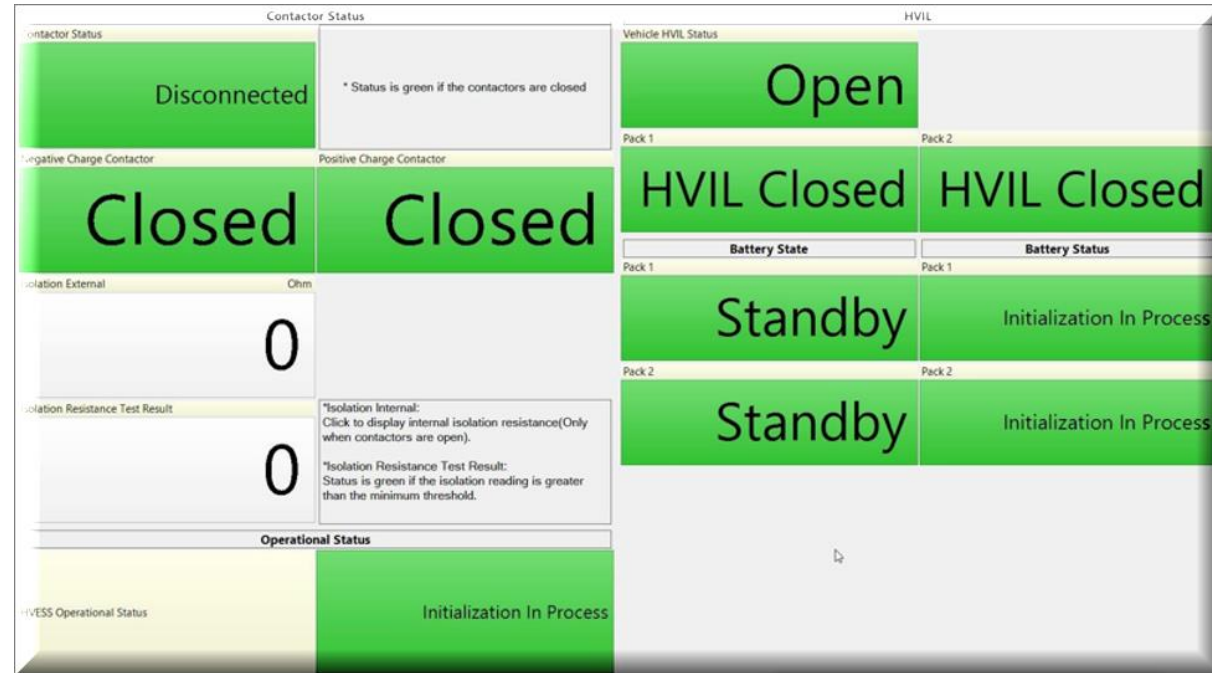
This panel will read a set of live data from TCM07T ECU listed below to monitor the torque converter:

- Engine Speed
- Turbine Speed
- Actual Gear
- Transmission Oil Temperature



Battery Contractor panel

- This panel gives the details of the battery contractor and the isolation resistance.
- Parameters pertaining to the Battery state and pack wise details are also included.

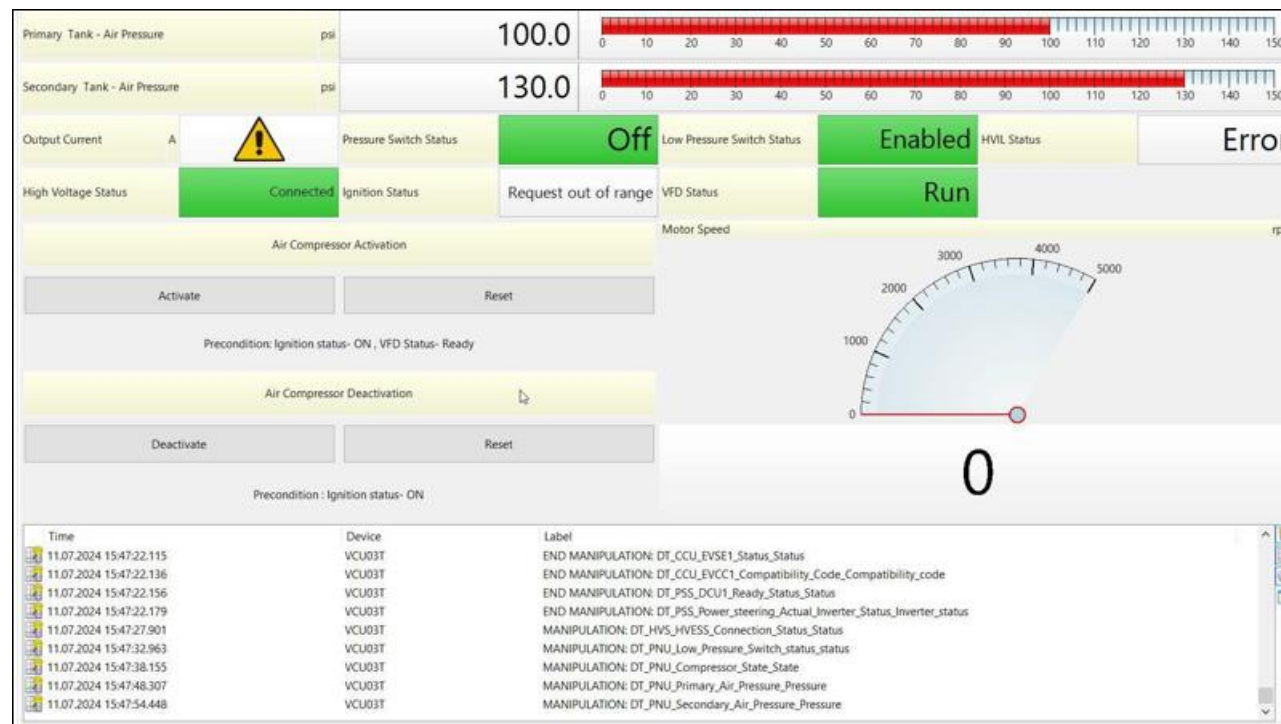


The screenshot displays the Battery Contractor panel with the following details:

- Contactor Status:** Disconnected. Note: * Status is green if the contactors are closed.
- Vehicle HVIL Status:** Open.
- Negative Charge Contactor:** Closed
- Positive Charge Contactor:** Closed
- Isolation External (Ohm):** 0
- Isolation Resistance Test Result:** 0. Note: *Isolation Internal: Click to display internal isolation resistance(Only when contactors are open). *Isolation Resistance Test Result: Status is green if the isolation reading is greater than the minimum threshold.
- Operational Status:** Initialization In Process.
- Battery State (Pack 1):** Standby
- Battery State (Pack 2):** Initialization In Process
- Vehicle HVIL Status (Pack 1):** HVIL Closed
- Vehicle HVIL Status (Pack 2):** HVIL Closed

Air Compressor panel

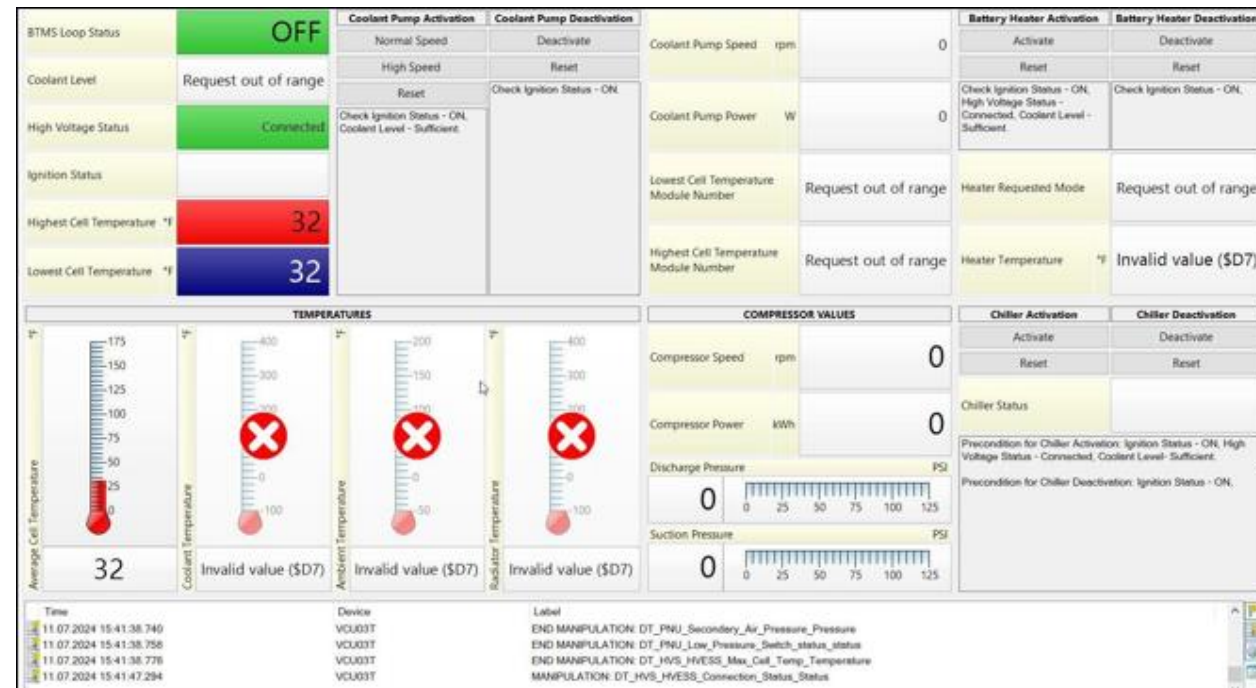
- Compressed air is primarily used for the brake system, airbags in case of an air-suspension option, and other air actuated accessories. This feature defines the controls involved in generation of compressed air for safe operation of the vehicle and accessories.



Cab Thermal Management panel

DRIVING THE UPTIME REVOLUTION

- Cab Temperature Control describes the delivery of temperature-controlled air from main HVAC vents (located in vehicle dash) to maintain cabin comfort.
- Temperature control is accomplished using an electrically controlled blend door, which varies the amount of air flow directed through heater core.
- Heating is provided by heat extracted from coolant by the heater core (liquid-to-air heat exchanger)(coolant is heated by resistive heater).
- Cooling is provided by an A/C compressor with electrically actuated variable speed.
- Air flow is provided by a variable speed blower.
- Air distribution is controlled by panel, floor, and defrost doors.



Charging panel

- Gives an overall view on the parameters associated with the Battery Charging system.
- EVSE & EVCC parameters are laid down along with the Service routine for the Latch motor actuation.


Charger Completed Status	Complete	Charger Contactor Status	Connected
Current/Voltage Mismatch	False	EVCC Status	State B
Charge Plug Proximity		EVSE Response Code	OK
Latch Status	Locked	EVCC Control Charger Status	Not Available
Precondition for Latch Open Actuation: Charger Contactor Status - Disconnected, High Voltage Status - Disconnected.		V2G Discharge	True
Precondition for Latch Close Actuation: Ignition Status-ON, Charger Contactor Status - Disconnected, High Voltage Status - Disconnected.		V2G Report	W 0
Latch Open Actuation	Latch Close Actuation	Low SOC	False
Latch Open	Latch Close	Current Delivered	A 
Reset	Reset	BMS Target Current	A 
Ignition Status	HVESS Connection Status Connected	Maximum Current	A 
Charge Port Temperature	*F Request out of range	EVSE DC Voltage	V 
EVSE DC Charge Status	Charging	EVSE DC Current	A 0
EVSE Status	EVSE Ready	EVSE Power Limit	Not limited or no EVSE connected
EVCC Compatibility	EVSE is compatible	Last Abort Code 1	Request out of range
		Last Abort Code 2	Request out of range
Time	Device	Label	
11.07.2024 15:44:22.558	VCU03T	MANIPULATION: DT_CCU_Low_SOC_Low_SOC	
11.07.2024 15:44:31.053	VCU03T	MANIPULATION: DT_CCU_EVSE1_DC_Charging_State_Status	
11.07.2024 15:44:36.832	VCU03T	MANIPULATION: DT_CCU_EVSE1_Status_Status	
11.07.2024 15:44:43.128	VCU03T	MANIPULATION: DT_CCU_EVCC1_Compatibility_Code_Compatibility_code	

Power Steering panel

- Electric Power Steering describes the assist which is provided to the driver to make steering the vehicle easier. Provision to control the speed of the Power steering pump motor is also enabled.


Output Current	A	0	DCU1 Ready Status	DC-DC Ready for Operation	Inverter Status	Power Section Enabled
Ambient Temperature	*F	Invalid value (\$D7)	HPS Assistance Mode	Off	High Voltage Status	Connected
Park Brake Status		Set	HPS Assistance Fault	None	Ignition Status	Request out of range

Vehicle Speed



Request out of range

Pump Speed



0

Time	Device	Label
11.07.2024 15:44:02.599	VCU03T	MANIPULATION: DT_CCU_EVCC1_Control_Pilot_Sub_State_sub_state
11.07.2024 15:44:07.532	VCU03T	MANIPULATION: DT_CCU_EVCC1_Control_Pilot_Sub_State_sub_state
11.07.2024 15:44:10.907	VCU03T	MANIPULATION: DT_CCU_EVCC1_Control_Pilot_Sub_State_sub_state
11.07.2024 15:44:18.152	VCU03T	MANIPULATION: DT_CCU_EVSE_V2G_Discharge_not_Supported
11.07.2024 15:44:22.558	VCU03T	MANIPULATION: DT_CCU_Low_SOC_Low_SOC
11.07.2024 15:44:31.053	VCU03T	MANIPULATION: DT_CCU_EVSE1_DC_Charging_State_Status
11.07.2024 15:44:36.832	VCU03T	MANIPULATION: DT_CCU_EVSE1_Status_Status
11.07.2024 15:44:43.128	VCU03T	MANIPULATION: DT_CCU_EVCC1_Compatibility_Code_Compatibility_code
11.07.2024 15:45:34.663	VCU03T	MANIPULATION: DT_PSS_DCUI_Ready_Status_Status
11.07.2024 15:45:41.063	VCU03T	MANIPULATION: DT_PSS_Power_steering_Actual_Inverter_Status_Inverter_status

Power Steering Motor Activation

Normal Speed

Default Speed

Reset

Power Steering Motor Deactivation

Deactivate

Reset

Precondition for Power Steering Motor Activation: Check Ignition-ON, High Voltage Status-Connected.

Precondition for Power Steering Motor Deactivation: Check Ignition Status-ON.

Certificate Based Identification for Diagnostics (CeBID) Overview

12/9/2024

CeBID = CyberSecurity Project @ DTNA (page 1)

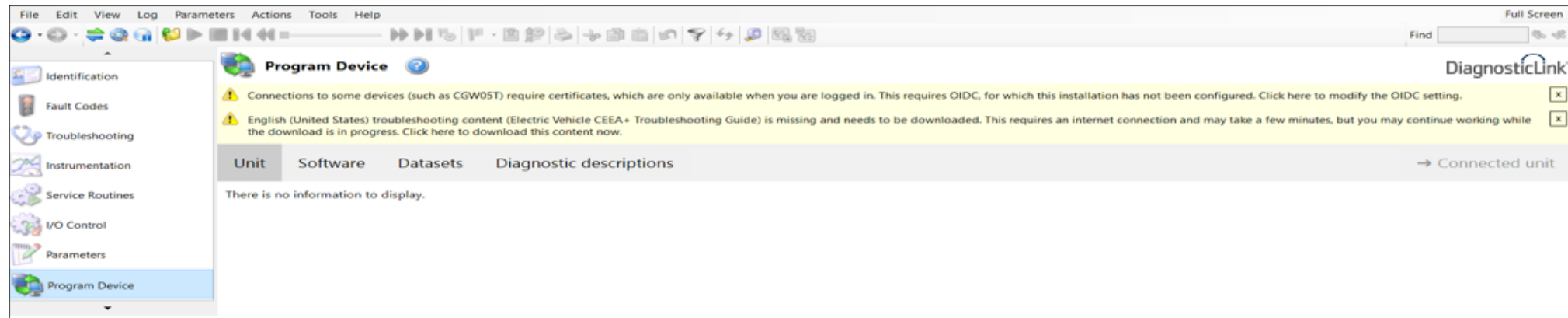
- CeBID is the project name for a complete system that protects Gen5 and future Daimler products
- Gen5 Cascadia critical ECUs will now have a layer of security to ensure neither inadvertent nor nefarious activities can not be performed on them
- DiagnosticLink requires approved Certificates from central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

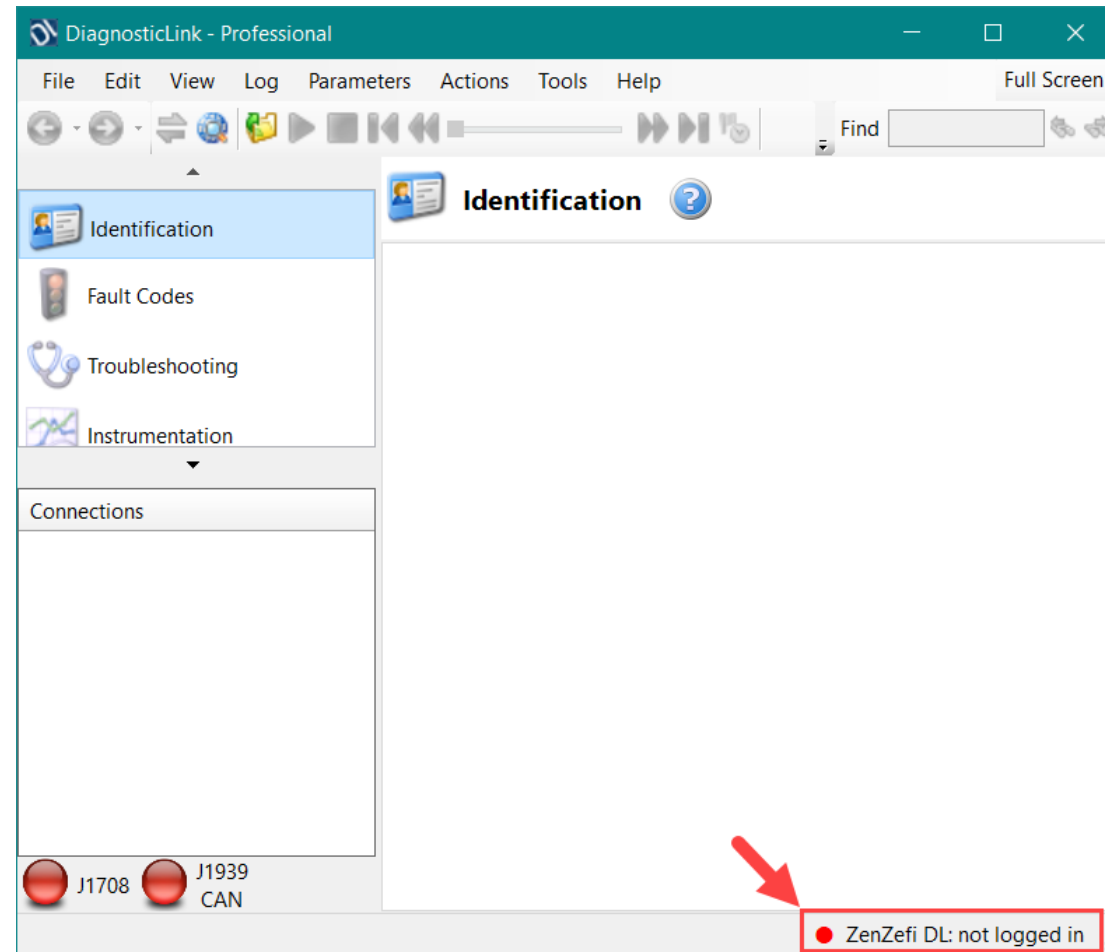
CeBID = CyberSecurity Project @ DTNA (page 2)

- DiagnosticLink will display an 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.



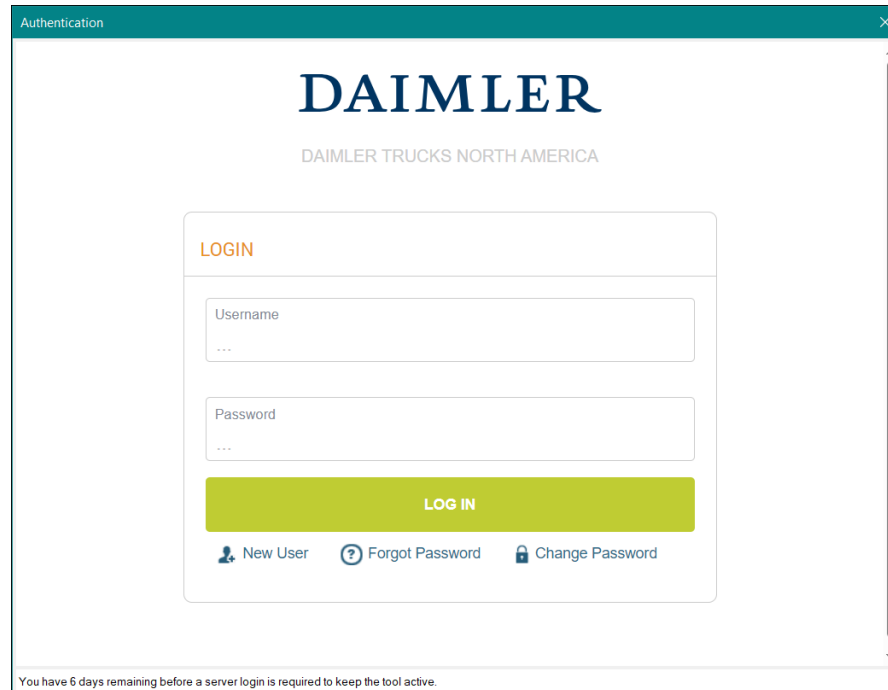
CeBID = CyberSecurity Project @ DTNA (page 3)

- The **ZenZefi** DL logon indicator is applicable when connected to a Fifth Generation Cascadia or a vehicle with CeBID enabled ECUs.
- When connected to non-CeBID based ECUs/vehicles, the ZenZefi DL logon will not be required. The status will display **'not logged in'**.



OIDC CIAM Dual Login Requirement (page 4)

- Users may be required to login twice for Single Sign On (SSO) systems (e.g., *DTNA Portal*, *TechLane*, *DiagnosticLink...*). This requirement is due ongoing backend system changes.



Thank you

12/9/2024