RA AUTOMOTIVE
SOFTWARE SOLUTIONS

Silver Snap-Tool
Manual

Version 2026-10-12-r66396

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TIP You can always find the latest version of this manual for download (PDF) on https://silversnaptool.com.

NOTE The following sections assume that Silver Snap-Tool is already installed and running. If you need instructions on how to install Silver Snap-Tool, please refer to the installation guide.

1. OBD readout explained (for daily use)

TIP This chapter serves as a go-to for your every day work. It assumes that Silver Snap-Tool is already running.

CAUTION **Please make sure no other OBD scan tool or VCI software ("device tester") is open.**

TIP **Dark mode available: If you are working in daylight or very light environments you can switch to dark mode by pressing and holding CTRL + SHIFT and then pressing D. Use the same key combination to switch back to light mode.**

1.1. Connecting to the vehicle

1.1.1. Vehicle OBD ports

In order to read out a snapshot you need to connect your vehicle to your computer via the vehicle's OBD port.

There are basically two kinds of OBD connectors in vehicles. So one of these is present in your vehicle:

- 16-pin OBD II connector used for J1979 and SAE J1979-2
- 9-pin J1939 connector (usually found on heavy-duty vehicles)

CAUTION Some vehicles have both a OBD II and J1939 connector. In such a scenario, ensure to connect your VCI to the actual OEM OBD port and not an auxiliary port. Your dealer might help you to find out which is the correct one.

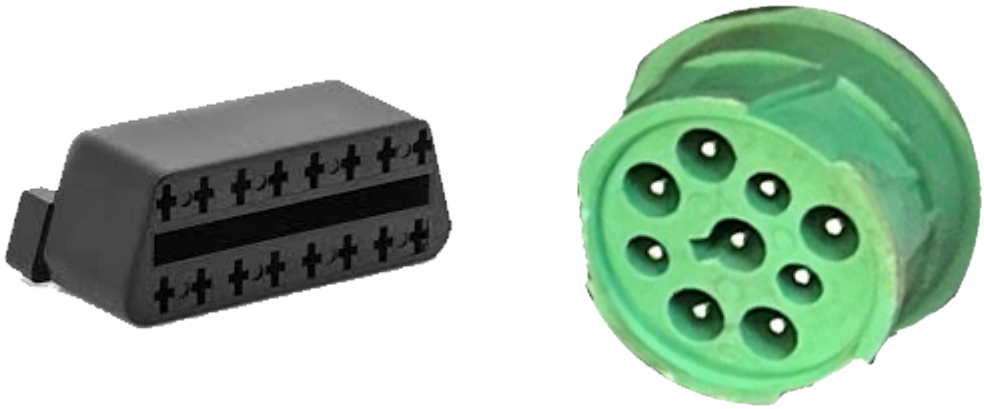


Figure 1. 16-pin OBD II connector used for SAE J1979 (OBD II) and SAE J1979-2 (left) and 9-pin OBD connector used for SAE J1939 (right)

How to find the OBD connector:

```
The connector shall be mounted inside the cab in a location that is easily accessible
according to the guidelines as follows.
However, applications subject to OBD requirements must comply with the applicable
regulatory requirements.

a. For on road heavy trucks, the connector should be mounted on the driver side and if
possible, accessible from the ground next to the cab.

b. For buses, the connector should be located within reach of the operator's seat.
For rear engine buses, an additional connector may be mounted in the engine
compartment that will allow access from the ground next to the bus.

c. For construction and agricultural equipment, it is recommended that the connector
for the tractor bus be located behind the operator's seat or under the dash at the
operator's knees.
This connector must be labeled as the diagnostic connector.
A diagnostic connector may be located elsewhere, in addition to a connector at the
recommended location.

Source: SAE J1939-13: SURFACE VEHICLE RECOMMENDED PRACTICE, Off-Board Diagnostic
Connector
```

1.1.2. Wiring up your system

In order to communicate with your vehicle you need a so-called vehicle communication interface (VCI). Please see Section 4.2, “List of approved interfaces”. The interface of your choice is then plugged onto the OBD connector of your vehicle and also plugged into a free USB port on your computer.

CAUTION

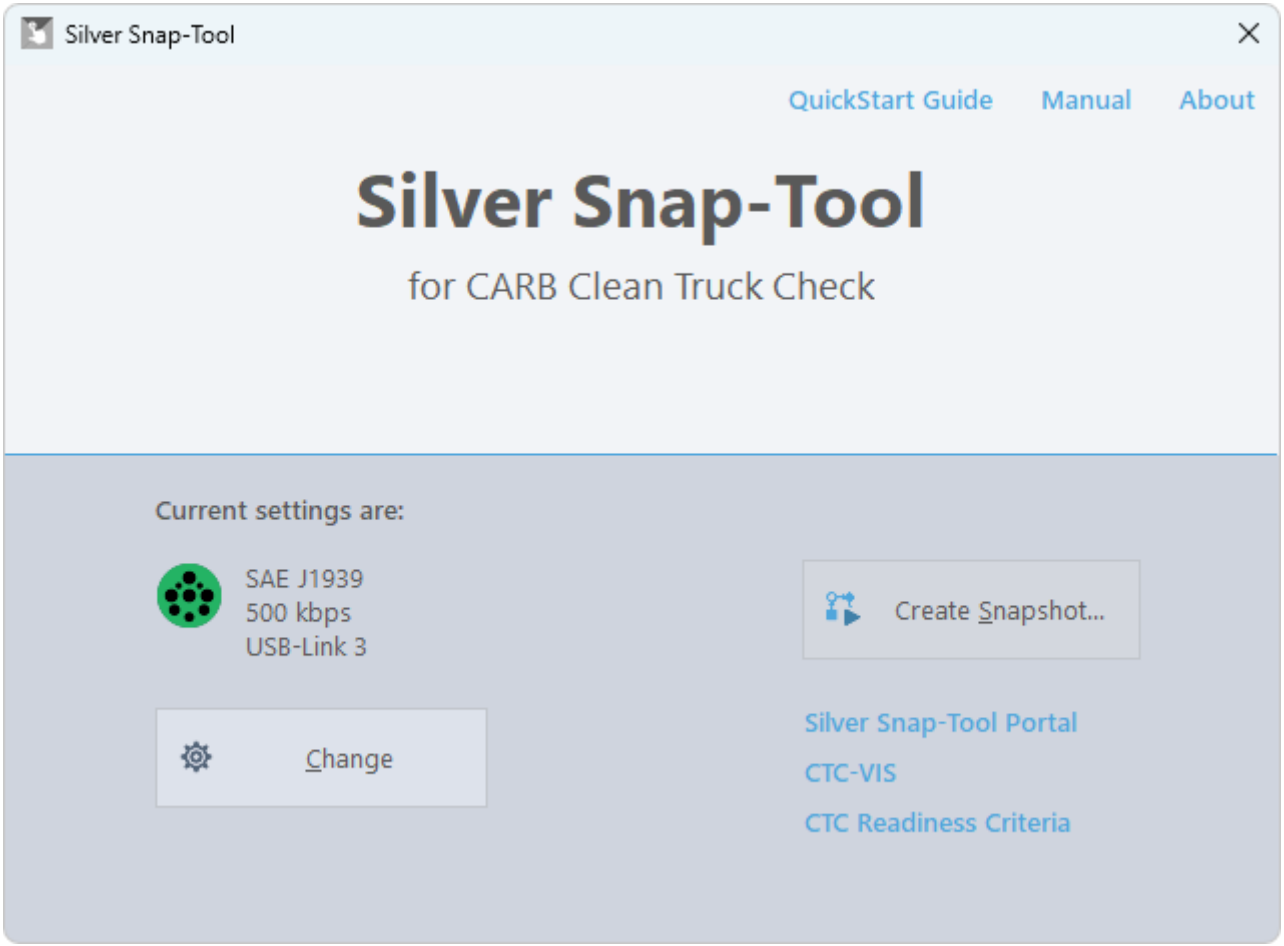
Some issues in establishing communications or reading snapshots are caused by an inapproriate order of connecting your vehicle, VCI and computer to each other. So please mind to following instructions.

Please always follow these steps to properly wire up your system:

1. VCI is connected to your computer
2. Vehicle’s ignition is off
3. Turn ignition on
4. **Wait until vehicle’s system has started completely (all dash lights and chimes have stopped)**
5. Turn on the engine
6. **Connect your VCI to the vehicle’s OEM OBD port (remove any GPS/ELD/telematics devices and y-cable splitters)**
7. Continue as described in the following sections

1.2. Main window

After starting Silver Snap-Tool you will be greeted by its main window.



On the right you can find the *Create Snapshot...* button but first, let's care for proper communication settings. They can be adjusted via the *Change* button on the left.

1.3. Communication settings

Depending on your vehicle, you now will need to configure proper communication settings by selecting your VCI, the protocol and its baud rate. So, please open the settings dialog by pressing the corresponding *Change* button in the main dialog.

There are three communication protocols to choose from: SAE J1979 (OBD II), SAE J1979-2, and SAE J1939.

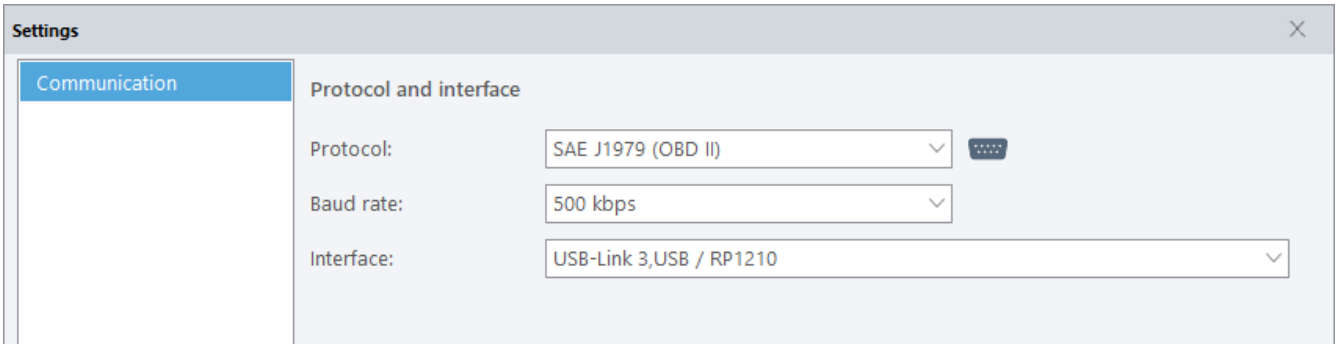


Figure 2. Communication settings

As a fourth option, you can also select automatic detection of the first two protocols. In this case, the baud rate is also detected automatically.

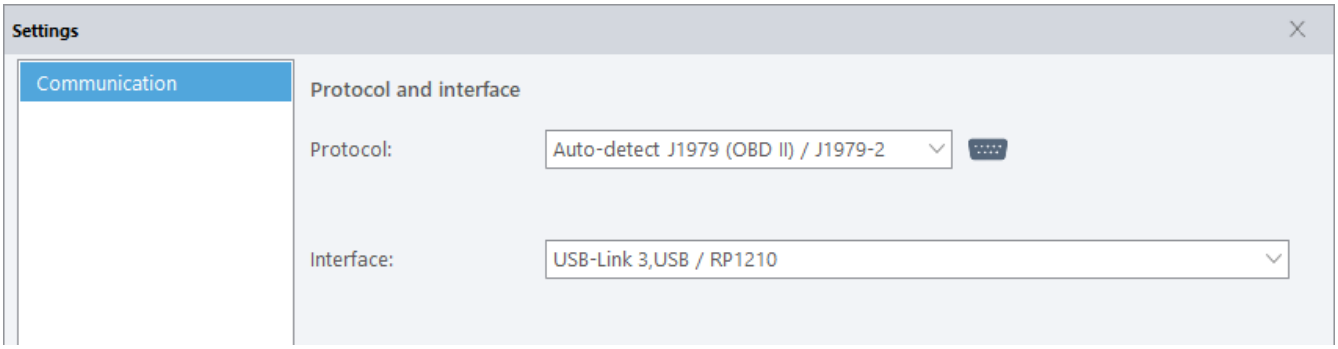


Figure 3. Communication settings for automatic protocol detection between SAE J1979 (OBD II) and SAE J1979-2

Below is a guide on how to determine which protocol is the correct one to be selected:

If a 9-pin Deutsch connector is present, the vehicle uses the J1939 protocol. Two different communication speeds are possible. A black connector indicates a baud rate of 250 kbps, a green connector indicates 500 kbps in most vehicles. However, in some vehicles 250 kbps may also be the correct setting.

Trucks with a 16-pin OBD II connector use the J1979 protocol, while most recent Volvos and Macks use J1979-2. 500 kbps is the only communication speed for these protocols.

The following table summarizes how you can derive the protocol and baud rate from the OBD connector type.

	Black 9-pin Deutsch connector	**Green 9-pin Deutsch connector**	**16-pin OBD II connector**
Protocol	SAE J1939	SAE J1939	SAE J1979 or SAE J1979-2
Baud rate	250kbps	500kpbs	500kbps

Finally, select your interface model (also see Section 4.2, “List of approved interfaces”).

IMPORTANT

If the interface dropdown is empty or if Silver Snap-Tool shows *"No VCI channel found"* in its main window, plug your VCI into the computer. If it’s still not recognized you are missing the necessary drivers. Use the Online Installer

to install the missing drivers, then.

NOTE

Finally, don't be worried if you are not exactly sure about the settings to choose for your vehicle. The worst that can happen is that the snapshot cannot be read because no communication can be established with the vehicle. In this case, a corresponding message appears and asks you to recheck your communication settings. Then try to find the closest plausible settings to the current ones using the table above and just try again. Also, in Section 2.1, "Vehicle communication issues" you will find further information for trouble-shooting such scenarios.

After having selected your interface and set the proper protocol and baud rate for your vehicle, please close the settings dialog.

Now press the *Create Snapshot...* button.

1.4. Authentication

This will open the snapshot dialog. Enter your account credentials and click the *Login* button or press the ENTER key.

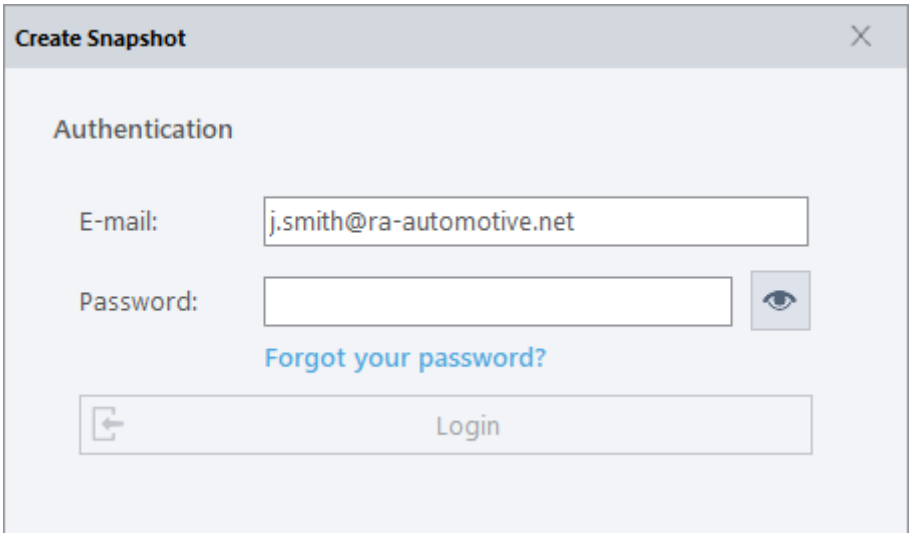


Figure 4. Silver Snap-Tool's "Create Snapshot" dialog

If the login is successful, the application will automatically proceed to the next page.

Your email address and tester ID number is displayed.

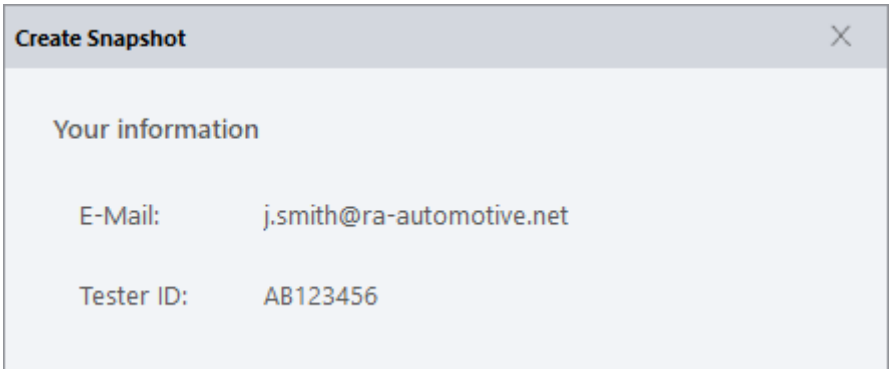


Figure 5. Silver Snap-Tool's "Create Snapshot" dialog

CAUTION

Please always check if your tester ID is up to date. Your tester ID number is assigned by CARB after you pass its Clean Truck Check Tester Training examination and is valid for two years after the date of issuance. You can edit and update your tester ID anytime in your Silver Snap-Tool Portal account. **An invalid or outdated tester ID will lead to a rejection of your submission.**

1.5. Completing the vehicle information

Now enter the identification number (VIN) and the license plate of the vehicle to be tested.

Exclamation mark icons next to the input boxes indicate if the entered VIN and license plate are valid, for example if enough characters have been entered.

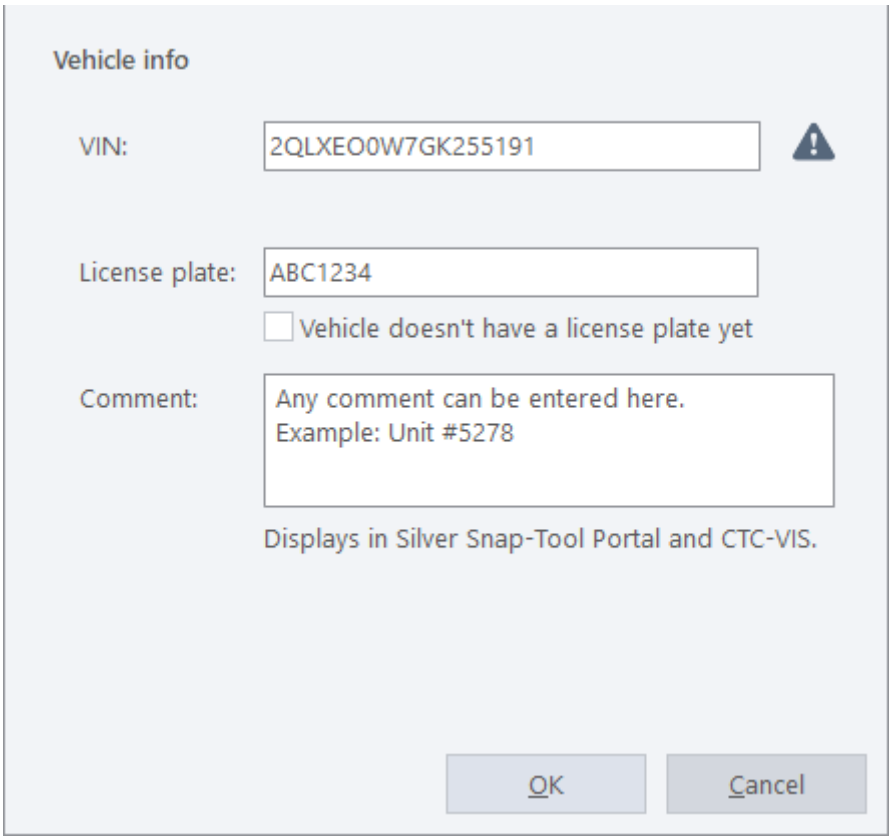


Figure 6. Silver Snap-Tool's "Create Snapshot" dialog that asks for vehicle information

NOTE

VIN and license plate are mandatory. You won't be able to start the snapshot before

entering these.

You can also add any comment (up to 255 characters) about the vehicle or any kind of helpful reference (Example: "Unit #5278"). This comment will not only show on CTC-VIS but also in your submission history on Silver Snap-Tool Portal and is searchable there, which could be beneficial when tracking down your submissions.

CAUTION Please keep data privacy in mind. While there are state of the art security measures in place to protect your personal data, be aware to not include personal identifying information if not necessary.

1.6. Create and submit snapshot

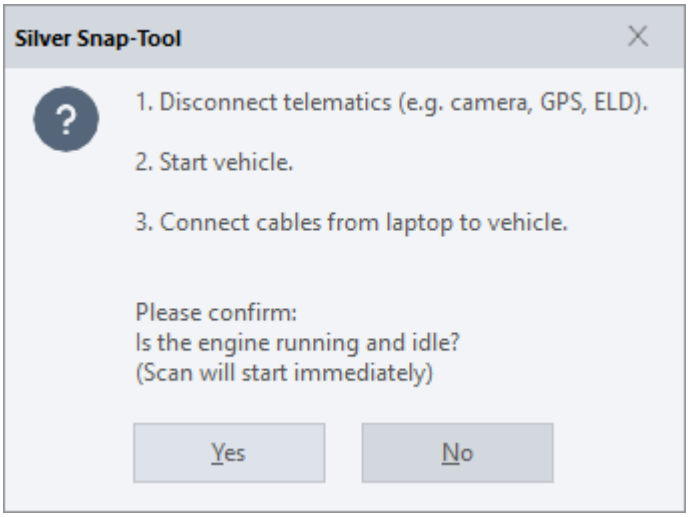
CAUTION **Please make sure no other OBD scan tool or VCI software ("device tester") is open.**

CAUTION **Before you continue, please make sure that you have followed the proper order when connecting to the vehicle.**

Click the OK button to create the snapshot.

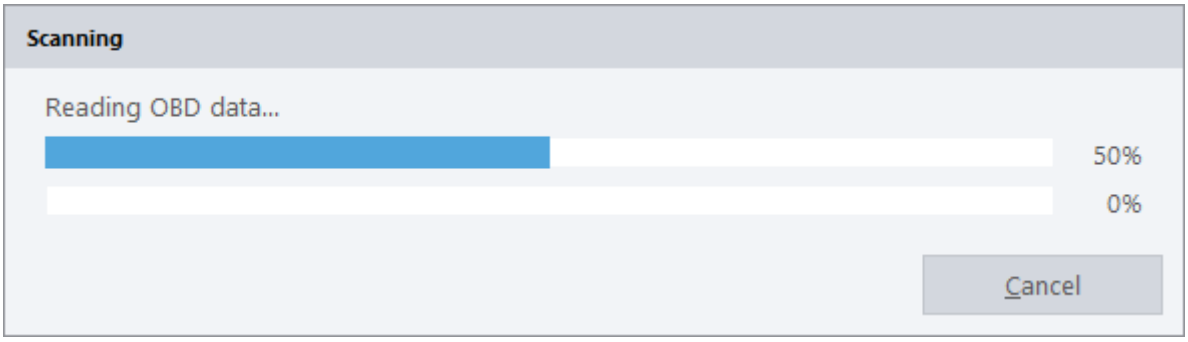
IMPORTANT In order to create a snapshot in accordance to CARB testing guidelines, please make sure that the engine is running and idle.

A confirmation shows up that asks if the engine is running and idle.

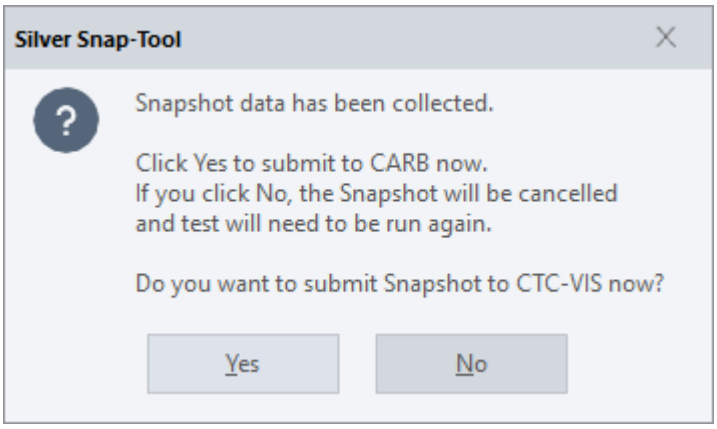


Only if this is true, please press *Yes*.

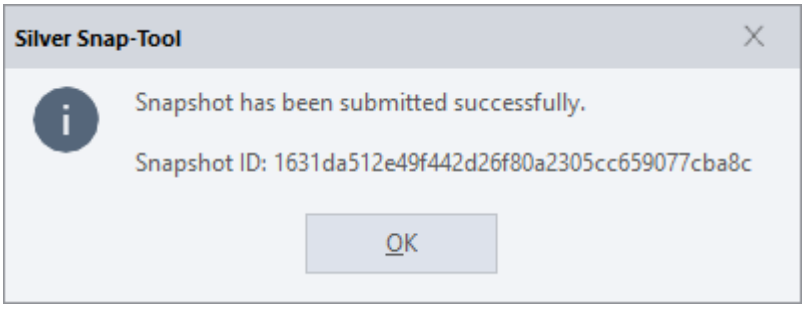
A window will open and inform you about the progress. At this point you can still cancel the snapshot, using the *Cancel* button.



As soon as the snapshot is successfully completed and encrypted, you will be asked if you want to submit your snapshot.



The successful submission will be confirmed with another message, containing the ID (see Section 4.1.2, “What is my Snapshot ID about?”) of your snapshot.



Depending on your preferred email settings in Silver Snap-Tool Portal, you will also receive an email confirming your submission.

2. Troubleshooting

2.1. Vehicle communication issues

There are scenarios where a vehicle just won't test.

Silver Snap-Tool has been thoroughly and successfully tested with a lot of different types and brands of vehicles, and no problems have been encountered. So, if a vehicle doesn't test, it is very likely that there is something wrong with that particular vehicle.

If you experience such a problem, there are basically two types of issues that can occur:

1. It might happen that the VCI is not able to connect to the CAN bus of the vehicle at all.

   Please refer to Section 2.1.1, "Connection failure" in such a case.

2. It might happen that Silver Snap-Tool is able to establish proper communication with the vehicle but the snapshot can't be finished.

   Please refer to Section 2.1.2, "OBD snapshot failure".

2.1.1. Connection failure

This issue can arise due to a multitude of reasons, so there are several things to check to resolve it:

1. Make sure that ignition is on, vehicle is "awake" and engine is running.
2. If you have several VCIs, make sure that the correct one is selected in the communication settings window (click ⚙ *Change* button on main screen).
3. Make sure that the correct protocol (OBD II, J1979-2, or J1939) is selected.
4. Make sure no other OBD scan tool or VCI software ("device tester") is open.
5. Ensure the vehicle communication interface (VCI) is plugged into the actual OEM OBD port. Some vehicles have both a J1939 and OBD II. For example, some Ford F-650 and F-750 models use Cummins engines and the 9-pin J1939 connector, while a Ford engine uses the 16-pin OBD II connector. Ensure the VCI is connected to the OEM OBD port and not an auxiliary port. See Section 1.1.1, "Vehicle OBD ports" and ensure that you wired up in correct order.
6. Has the engine been replaced on your vehicle? If yes, try using one of the other protocols (or auto-detection) in case the OBD port has not been updated but the new engine control unit in fact uses another protocol.
7. Regulation requires that all emission-related data must be available on CAN1 on the diagnostic port. That means pins 6/14 on the 16-pin OBD II connector and pins C/D on the 9-pin Deutsch connector. However, we have seen vehicles where a special cable (CAN "crossover cable", that takes CAN2 or CAN3 and places them on the pins for CAN1) was needed. Please ask your dealership if your vehicle might require such a cable.
8. Disconnect all GPS/ELD/camera/telematics devices and y-cable splitters to ensure to be directly connected to the OEM OBD port. Y-cable splitters might remap pins on the connector or use proprietary wiring. In such a case your VCI won't be able to physically connect to the CAN bus where the emission-related data is available.

9. Inspect the OBD port for damage, dirt, or obstruction. Correct the issue, reconnect to the OBD port and "push a little firmer" to completely seat the VCI into OBD port.
10. Inspect for damaged wiring leading to the OBD port.
11. Have the vehicle's owner check with their dealership regarding any pending software/gateway updates (service bulletins).
12. Though rare, you could have a defective VCI. Can you test a different vehicle? If yes, your VCI is working fine.

2.1.2. OBD snapshot failure

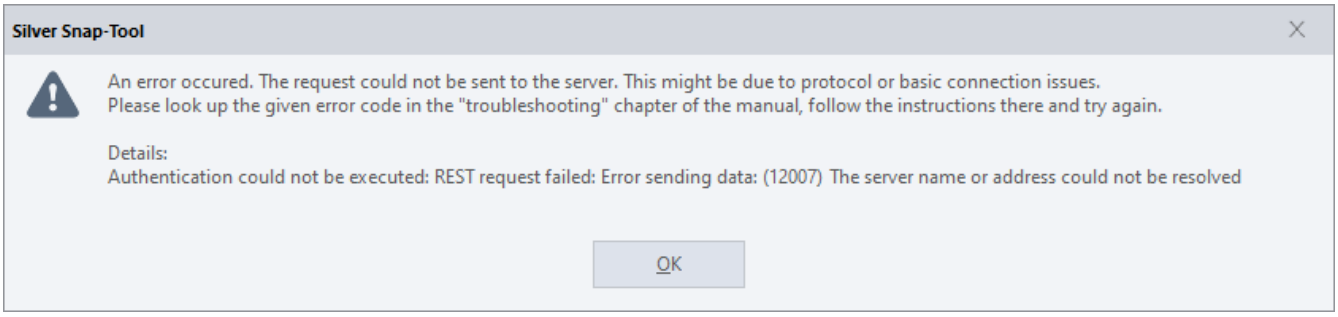
This issue can arise due to the following reasons:

1. Ensure the vehicle communication interface (VCI) is plugged into your computer.
2. Make sure that the correct protocol (OBD II, J1979-2, or J1939) is selected.
3. Check the engine model year. Only vehicles with engine model year 2013 and newer diesel engines and model year 2018 and newer alternative fuel engines are required to undergo OBD Clean Truck Check testing using software.
4. Ensure the vehicle communication interface (VCI) is plugged into the actual OEM OBD port. Some vehicles have both a J1939 and OBD II. For example, some Ford F-650 and F-750 models use Cummins engines and the 9-pin J1939 connector, while a Ford engine uses the 16-pin OBD II connector. Ensure the VCI is connected to the OEM OBD port and not an auxiliary port. See Section 1.1.1, "Vehicle OBD ports" and ensure that you wired up in correct order.
5. Disconnect all GPS/ELD/camera/telematics devices and y-cable splitters to ensure to be directly connected to the OEM OBD port. Y-cable splitters might remap pins on the connector or use proprietary wiring. In such a case your VCI won't be able to physically connect to the CAN bus where the emission-related data is available.
6. Some vehicles' OBD systems do not operate or respond properly according to the ODB standard. Please consult dealership.

2.2. Internet connection issues

2.2.1. Example

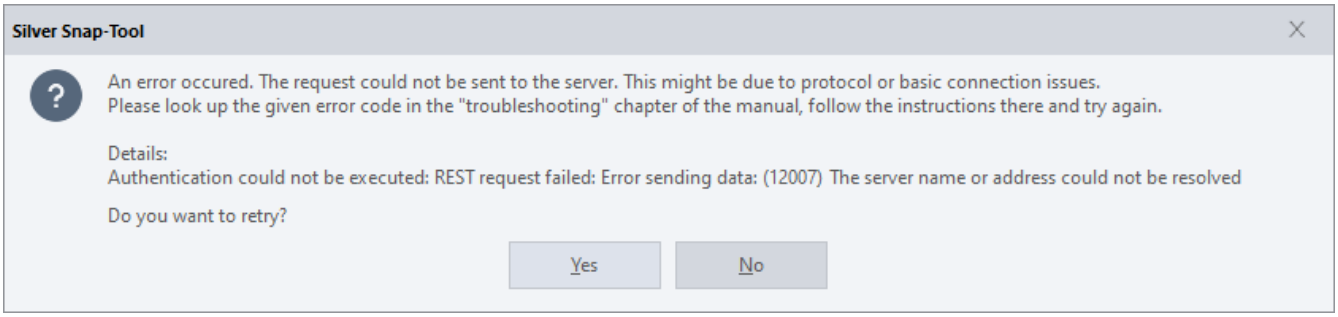
If there is no internet connection available during login, you will encounter a message like this:



If your internet connection is intermittent and not steady, it might occur that there is no connection at the moment when you want to submit the snapshot.

In this case, Silver Snap-Tool will ask you to retry the submission.

TIP Make sure your computer is not set to automatically connect to a Wi-Fi connection when using a hot spot. The computer could be going back and forth between these two connections causing an unsteady internet connection.



Take your time to resolve the issue and hit the *Yes* button in order to try to submit your snapshot.

2.2.2. General resolution measures

TIP For distinct error codes see the following sections. A list of all error codes can be found at Microsoft's website.

NOTE As connecting to the internet relies on many services and thus is quite complex, especially if Wi-Fi is used, it is not easy to find the cause of an issue. While the following steps might help to get an overall picture, it is not possible to conclude that everything is working fine, even if they succeed.

- In order to find out if your computer has basic internet access, you can check if you are able to browse common websites. Please use Microsoft Edge (as opposed to other browsers) to get a meaningful result, because is uses the same protocol stack as Silver Snap-Tool does. Example websites to test:

  https://www.google.com and/or https://www.bing.com

  https://portal.ca-hdim.ra-automotive.net
- Check or ask your IT deparment if a proxy server is used within your network.
- Check if Windows firewall prevents Silver Snap-Tool from accessing the network/internet. Silver Snap-Tool communicates via the basic HTTPS port 443.

2.2.3. Error code 12002 (ERROR_INTERNET_TIMEOUT)

NOTE Please also see Section 2.2.2, "General resolution measures".

This error can be returned as a result of TCP/IP time-out behavior, regardless of time-out values set in Windows HTTP Services. It can be caused by a firewall setting (also see the white list in the Installation Guide) or proxy configuration problem, but also just a temporary network failure.

2.2.4. Error code 12007 (ERROR_INTERNET_NAME_NOT_RESOLVED)

NOTE Please also see Section 2.2.2, “General resolution measures”.

This is an early error in regards to the steps performed when establishing a connection to a server in the internet.

For example, this error usually occurs if you have no network connection to the internet at all. It might be something easy to fix, like if your ethernet cable is unplugged or if your are out of your Wi-Fi’s range or if your internet router has no connection to the internet.

2.2.5. Error code 12175 (ERROR_INTERNET_DECODING_FAILED)

NOTE Please also see Section 2.2.2, “General resolution measures”.

Silver Snap-Tool could reach the server but the initial handshake failed or Windows couldn’t decode its response.

Explanation

This error might occur if basic encryption protocols are missing or deactivated in your Windows operating system. **The server only supports - and thus Silver Snap-Tool requires - HTTPS protocols TLS 1.2 or TLS 1.3.** So at least one of these two protocols must be present and enabled on your computer for a submission to succeed.

TIP Our Online Installer automatically checks if this requirement is fulfilled and shows a warning and some helpful instructions otherwise.

Reasons

Reasons for this error might be:

- You are using an unsupported version of Windows, like Windows 7 or an earlier version. For example, in Windows 7, by default, only insufficient SSL 3 and TLS 1.0 protocols are enabled by default. To find out which Windows version is running on your computer, please follow Microsoft’s instructions given on their website.
- Your computer may have gone through a series of Windows version upgrades (like, for example, Windows 7 to Windows 10), and the required TLS versions have not been enabled during those upgrades.
- The required TLS versions might have been manually deactivated on your computer.

Resolving steps

To resolve the latter two causes, please check your Windows settings:

1. Using the Windows start menu, search for "*internet options*".
2. Open the internet options.
3. Head to the "*Advanced*" page.

4. Scroll down all the way and check which protocols are available and activated.
5. Eventually activate the required protocols.

Further reasons and resolving steps

Should the issue persist after performing the above checks and steps, further known reasons for error code 12175 are:

- There has been a Microsoft update in October 2022 that broke the protocols on Windows 10 and Windows 11 and which later was fixed by another Microsoft update. The update must be installed manually and for x64-based systems it can be downloaded, here:

  Windows 10: KB5020435

  Windows 11: KB5020387

- Your computer might have set `DefaultSecureProtocols` to a conflicting custom value in its Windows registry. Does any of the follwing two registry values exist?

  ```
  HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\InternetSettings\WinHttp\DefaultSecureProtocols
  ```

  ```
  HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\CurrentVersion\Internet Settings\WinHttp\DefaultSecureProtocols
  ```

  If not, everything is fine. If yes, what are their values? Do they miss the required protocols given above?

3. About

Silver Snap-Tool is a Windows software application with the purpose of reading OBD data from light, medium and heavy trucks. After the readout, the data is packaged, encrypted (only CARB will be able to decrypt and read it) and finally transmitted to a CARB server. Each submitted snapshot will have its unique ID (called Snapshot ID) that also can be used to verify the integrity of the data at a later point, should this be required. The application is very easy to use and allows only really necessary settings to maximize user experience and robustness. VCI hardware is required to connect the computer on which Silver Snap-Tool is operated to the vehicle. Silver Snap-Tool operates as a CARB-compliant OBD scan tool of the California Clean Truck Check.

4. Appendix

4.1. FAQ

4.1.1. What is the Clean Truck Check ID?

Each submission to CARB will be assigned a random and unique ID. This ID can be used to identify the files - once they have been decrypted - that your submission contains. The basename of each file will contain this Clean Truck Check ID.

4.1.2. What is my Snapshot ID about?

Your Snapshot ID is the fingerprint (SHA1) of your input. It is calculated from the encrypted data before it is sent to CARB. This calculation is repeatable. With the Snapshot ID you can ensure or verify the integrity of your submission. If you recalculate the fingerprint of a submission (while it is still encrypted) and the result is still the same, you can assume that the data it contains has not been changed during transmission or afterwards.

4.2. List of approved interfaces

These devices have been approved by CARB:

- Kvaser Leaf Light HS v2 OBD II
- Kvaser Leaf Light HS v2 J1939-13 Type II
- Kvaser U100 including adapter cables to OBD II / J1939 Type II
- Kvaser Leaf v3
- DG Technologies DPA XL including adapter cable to OBD II / J1939 Type II
- Drew Technologies DrewLinQ including adapter cable to OBD II / J1939 Type II
- NEXIQ Technologies® USB-Link™ 2
- NEXIQ Technologies® USB-Link™ 3

4.3. Glossary

4.3.1. HD I/M

Acronym for CARB's Heavy-Duty Inspection And Maintenance Program. Later renamed to Clean Truck Check.

4.3.2. J1939

The SAE J1939 network protocol describes communication on a CAN bus in commercial vehicles for transmitting diagnostic data (e.g. engine speed, temperature) and control information.

4.3.3. J1979

The SAE J1979 standard provides a method for retrieving various diagnostic data and a list of available standard parameters from the ECU. The various available parameters are addressed by "parameter identification numbers" or PIDs defined in J1979.

4.3.4. J1979-2

SAE J1979-2 defines a method for retrieving diagnostic data from a vehicle using Unified Diagnostic Services (UDS). The available diagnostic data and functions are addressed through standardized UDS services and data identifiers defined for OBD purposes.

4.3.5. RP1210

The RP1210 API is an open interface between Windows-based applications and communication networks in vehicles.

4.3.6. VCI

Acronym for vehicle communication interface. Little piece of hardware that connects a computer to the vehicle, often using a USB port on the computer’s end.

Footnotes

Microsoft, Windows, Microsoft Edge and Microsoft Defender are trademarks of the Microsoft group of companies.