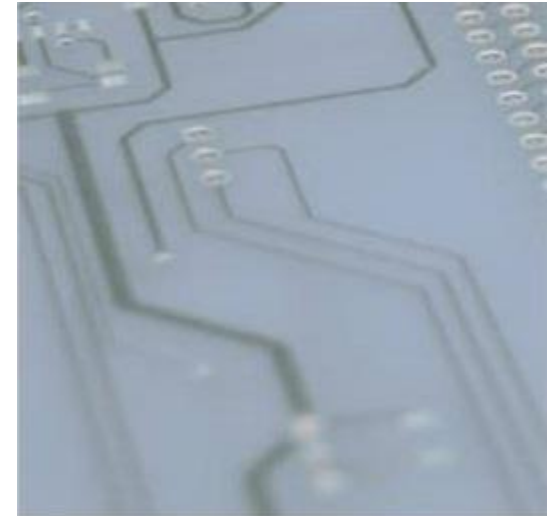
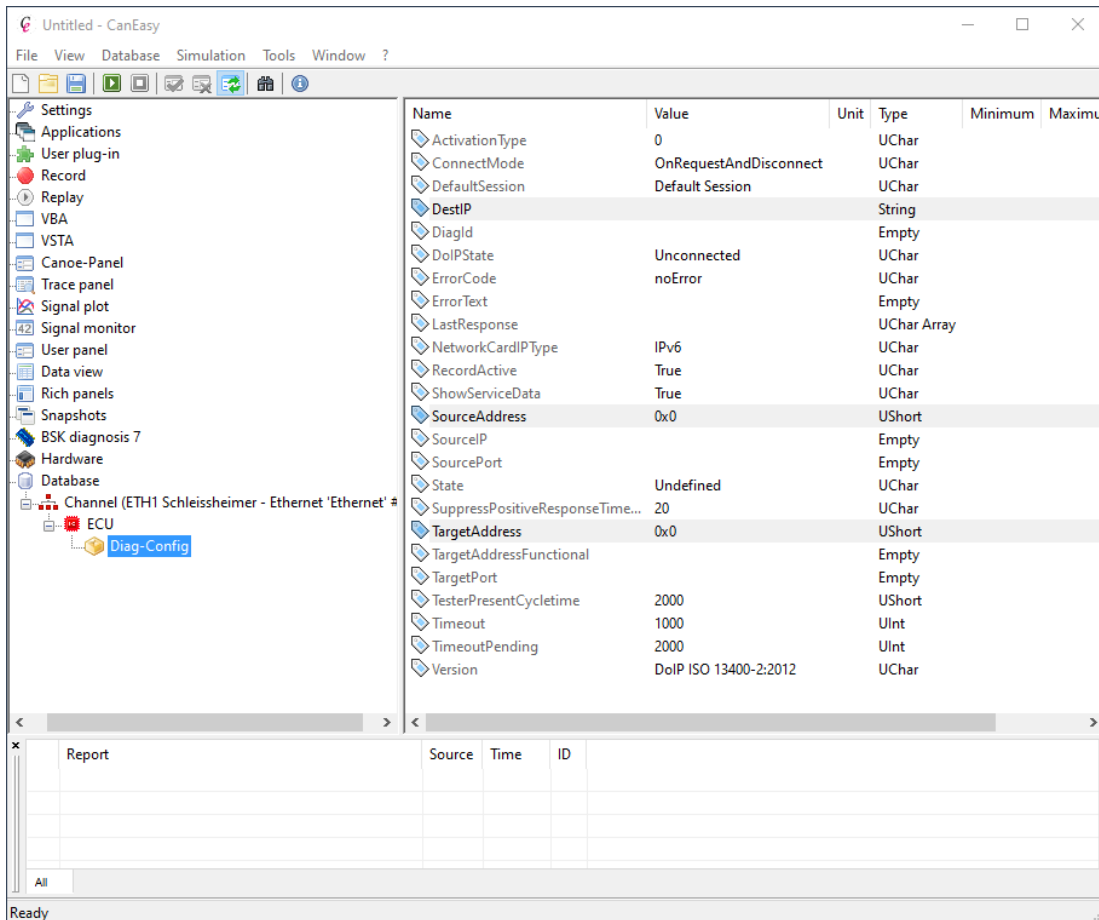


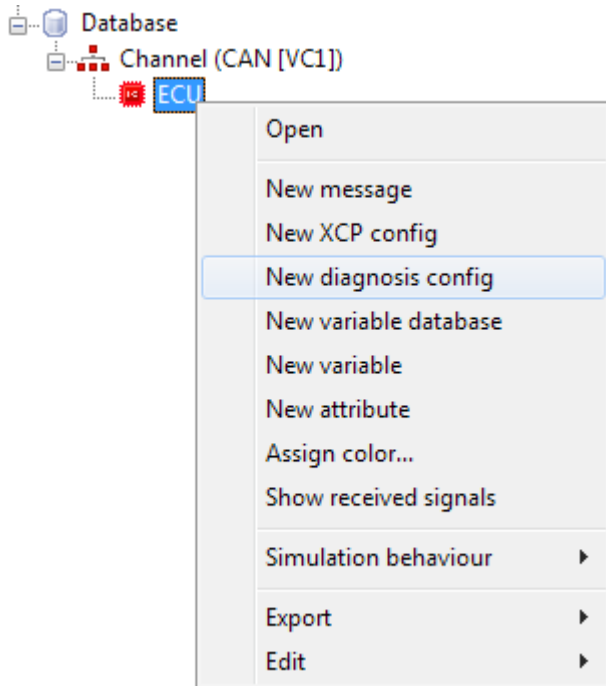
CanEasy Diagnostic services



Holger Dahinten

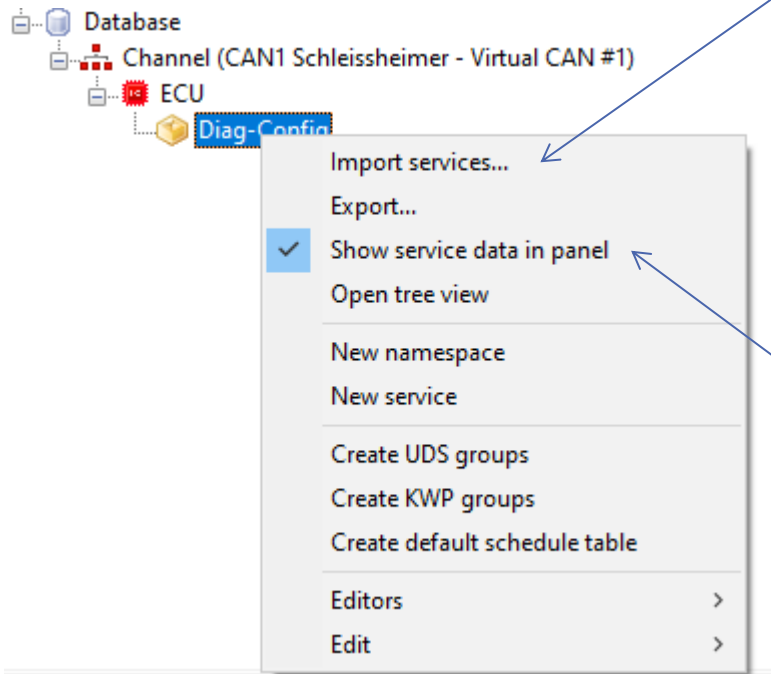
- CanEasy can import CDD and ODX/PDX files
 - Diagnostic services:
 - can be executed manually
 - can be automated via scheduler or VBA
 - Diagnostic service parameters:
 - are recorded
 - can be used within plot windows
 - New diagnostic services or missing parameters can be directly added in CanEasy
 - Diagnostic services or parameters can be quickly found using the search window
 - Custom panels can be easily create by drag & drop diagnostic services to "User panel"
-

Create a new diagnosis configuration



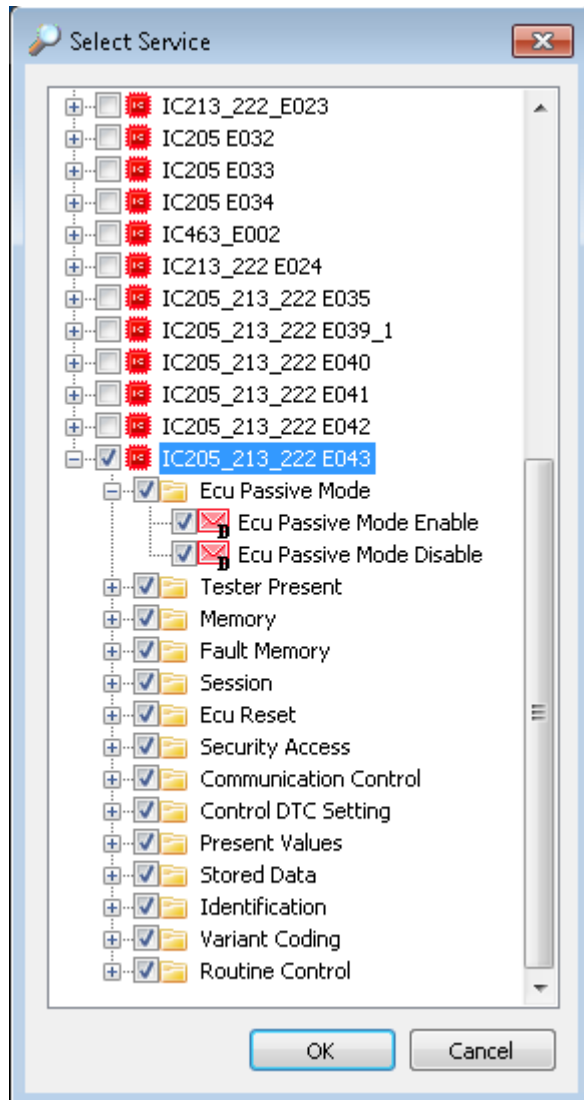
- To use diagnostic services you first need to create a diagnosis configuration under the ECU
- Every ECU can have its own configuration which mainly defines the diagnosis communication parameters
- You can run diagnostic services parallel with multiple ECUs

Import Services (CDD/ODX/PDX)



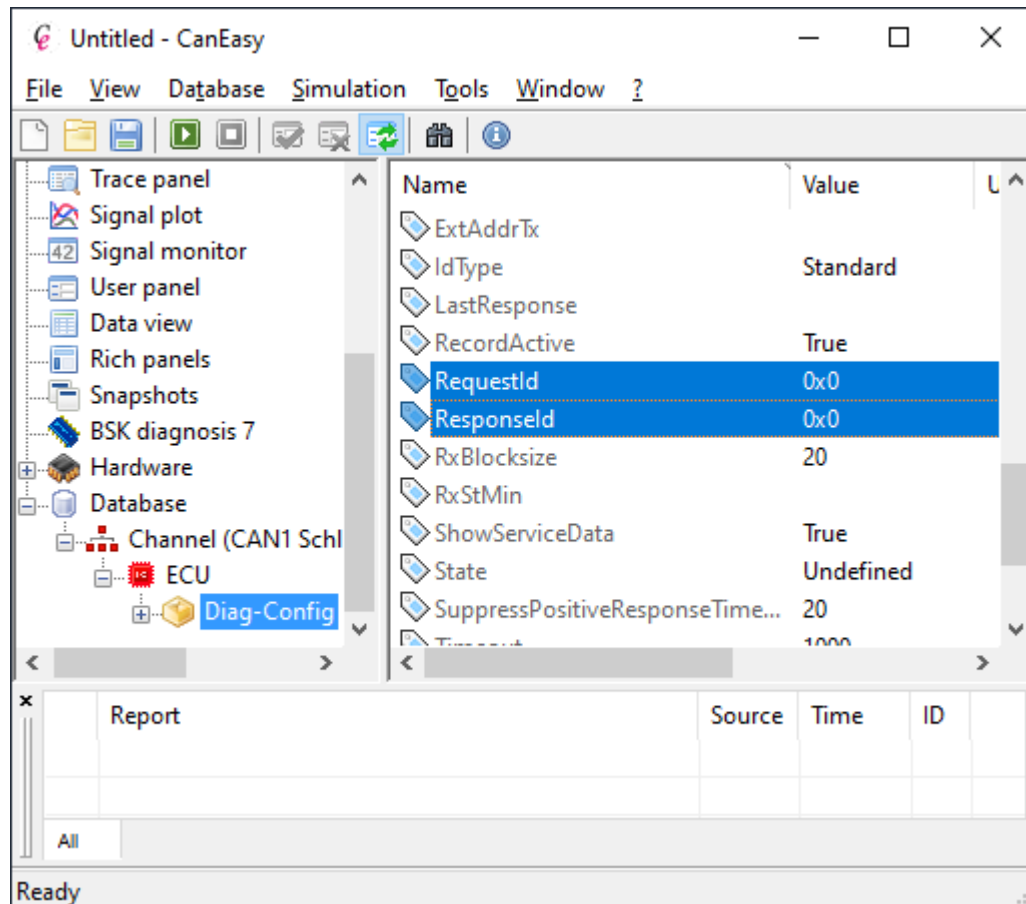
- Using the context menu of the diagnosis configuration you can import diagnosis files like CDD or ODX/PDX
- If you don't want to see the payload of request and response messages you can deactivate the "Show service data in panel"

Select variant or single services



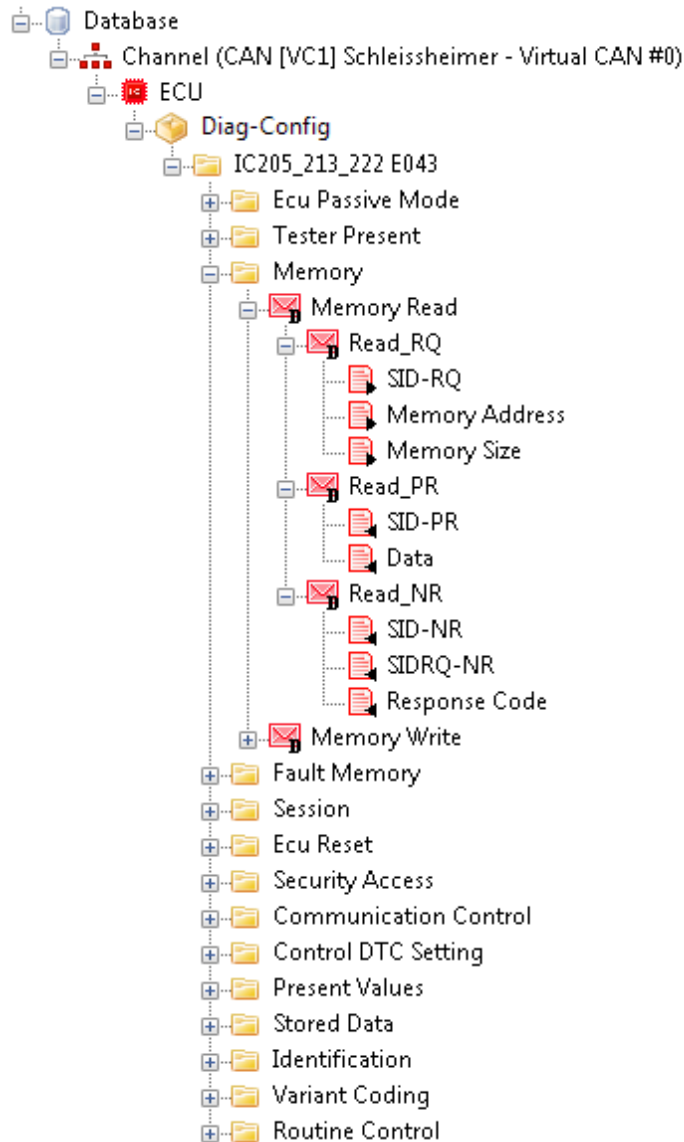
- Before using the diagnostic services you need to select the ECU variant you want to import from the CDD or ODX file
- You can also import only some service groups or just the services you need
- Activating an entry automatically selects all contained items

Overwrite physical CAN IDs



- If the CAN-ID's are not detected during import you have to set them manually
- Setup the physical CAN-IDs to be used

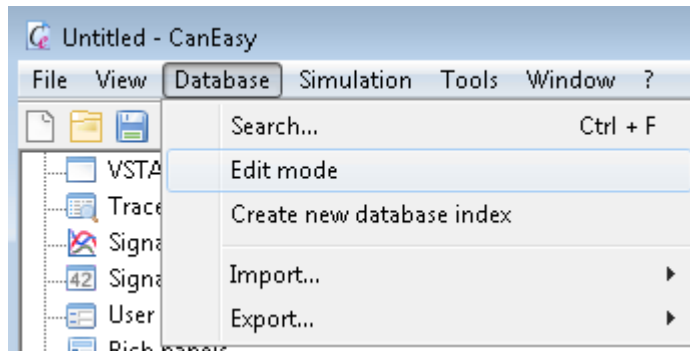
Complete service structure



Memory Read	
23 00 00 00 00 00	
Response Undefined	
0x23	SID-RQ
0x0	Memory Address
0x00	Memory Size
0x63	SID-PR
0x00	Data
0x7f	SID-NR
35	SIDRQ-NR
0	Response Code

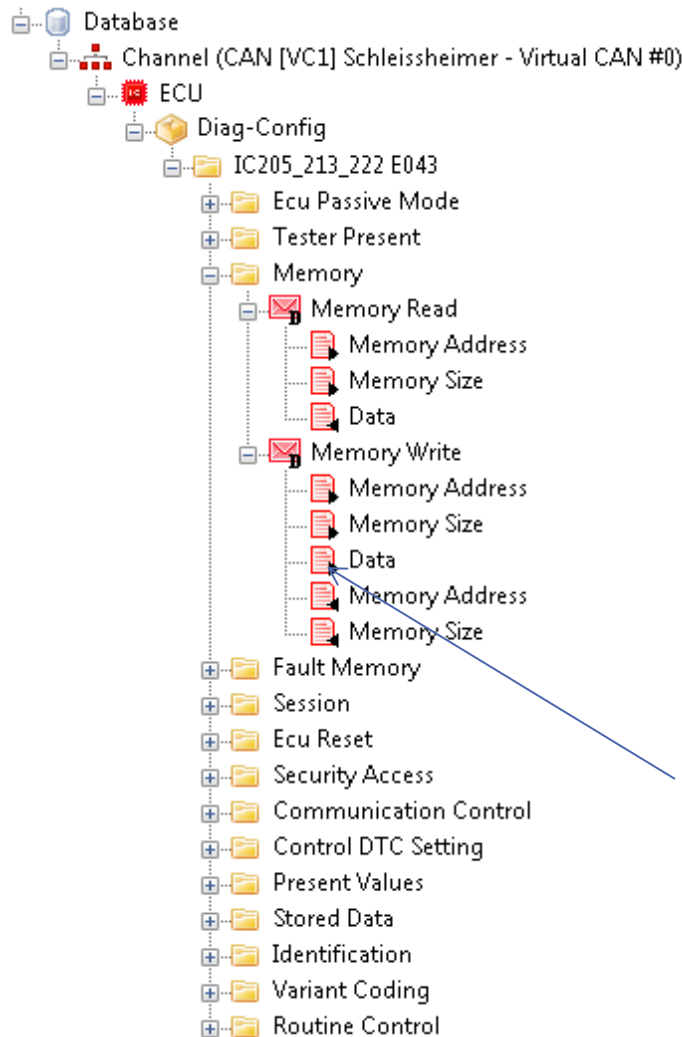
- After import you see all diagnostic groups, services and parameters
- Use double click on a diagnostic service to open a panel to enter parameters and to send the service manually

Switch to simple service structure



- Use the database "Edit mode" to switch between simple simulation view and more complex edit view
- Deactivating the "Edit mode" you see only editable parameters (see property "Const")
- Also the request and response entries are removed
- Activating the "Edit mode" you can change the complete content (payload, SIDs, ...)

Simplified service structure



A screenshot of a 'Memory Read' window. The window has a title bar 'Memory Read' and standard window controls. Inside, there is a 'Memory Read' section with a 'Send' button. Below this, the text '23 00 00 00 00 00' is displayed. A 'Response' section shows 'Undefined'. At the bottom, there are three input fields: '0x0' for 'Memory Address', '0x00' for 'Memory Size', and '0x00' for 'Data'.

- Request and response parameter are at the same level under the service
- You can see the direction of parameters via the arrow overlay icon

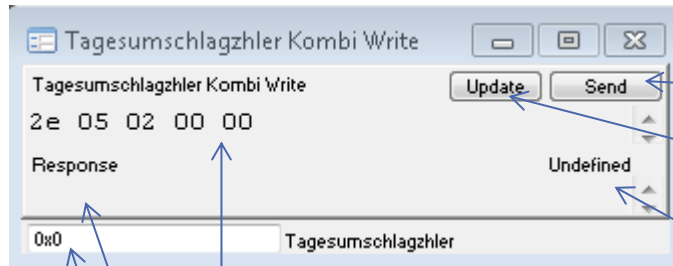


request parameter














response parameter

Working with panel



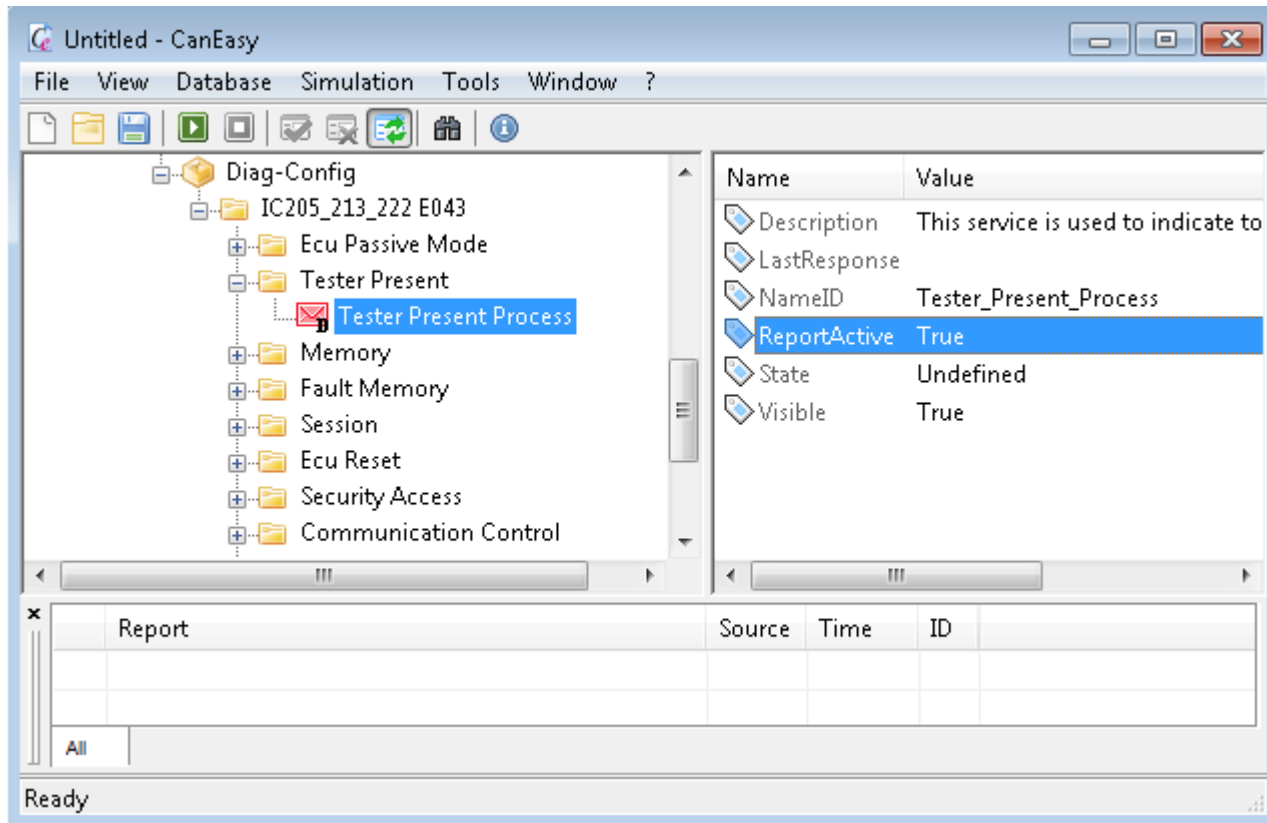
- Use the “Send” button to manually send the service
 - Use the “Update” button for Read/Write services to take the payload from the read response
 - See the state of the request:
 - **Undefined**
request was not sent yet
 - **Pending**
waiting for response
 - **Error**
no acknowledge was received
 - **Timeout**
no response was received
 - **Ok**
positive response was received
- Payload can be modified only in “Edit mode”
 - The last response is shown below the request
 - Request parameters can be changed
 - Response parameters are read only

Diagnosis report

Report	
	Tx: 10 03 (Extended Start)
	=> Rx: 50 03 00 14 00 C8
	P2_CAN_ECU_max: 0x14
	P2s_CAN_ECU_max: 0xc8
	Tx: 31 01 03 03 00 (Displaytest Start)
	Testbildnummer: 0x00 : white
	=> Rx: 71 01 03 03
	Tx: 31 01 03 03 00 00 (Displaytest Start)
	Testbildnummer: 0x00 : white
	=> Rx: 7F 31 13
	Response Code: 19

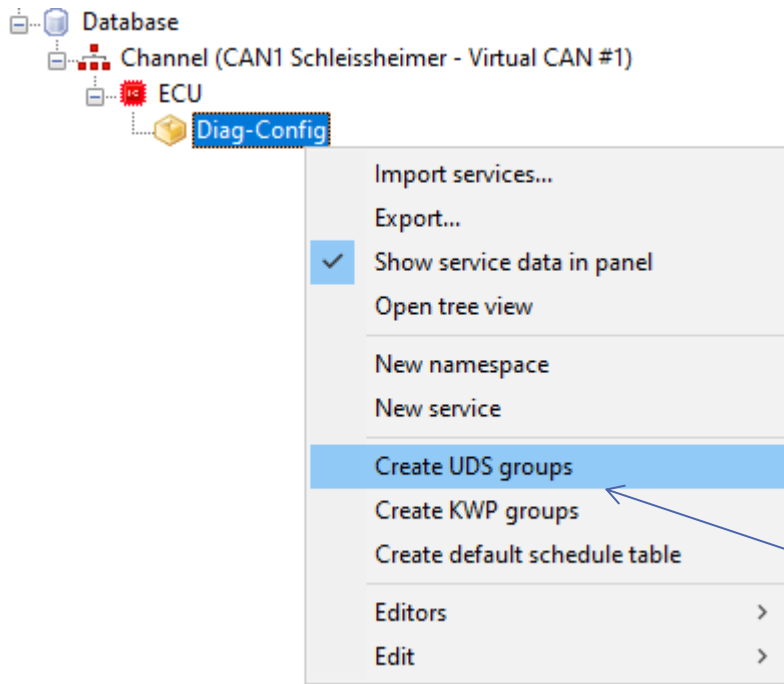
- Taking a look at the report window of CanEasy you get information about all transmitted services
 - Payload of request and response
 - Request and response parameter values
 - Information about timeout or error
- Undock the report window if you want to see a larger history

Deactivate diagnosis report

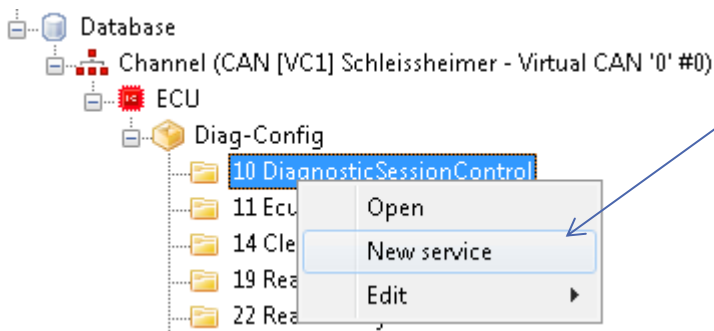


- If you don't want to see outputs in the report window (e.g. cyclic services, ...) you can do this by changing the property "ReportActive"

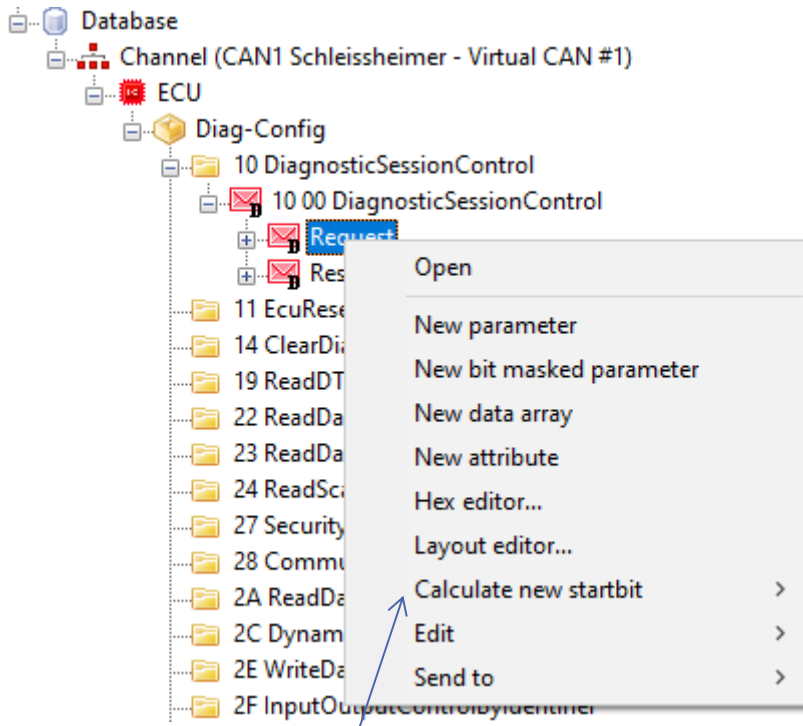
Create services manually



- If you don't have a CDD or ODX file or there are some missing diagnostic services or parameters you can create them directly in CanEasy
- Creates all known UDS or KWP groups
- Within the group you can create the services
- Within the services you can create new parameters

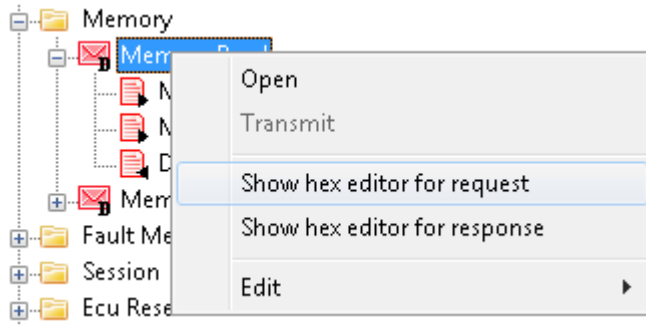


Create service parameter

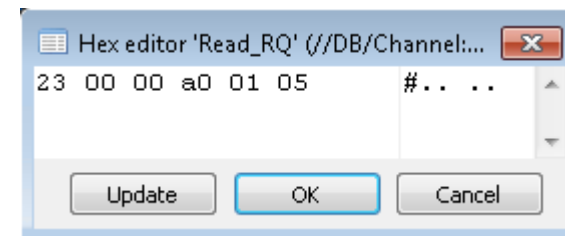
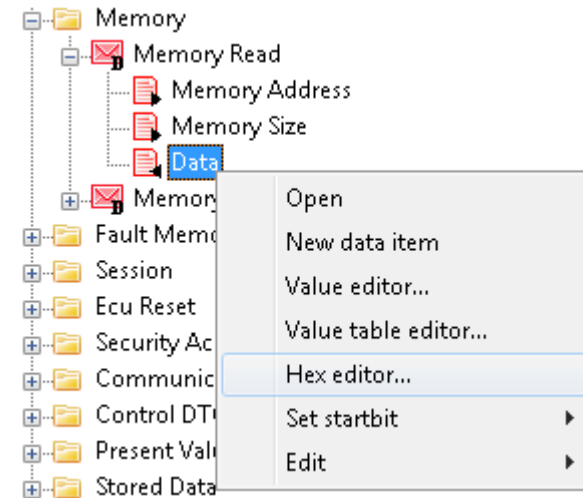


- Creating a service parameter
- Inside of service parameters you can create child parameters to build up structured data
- To setup new parameters you need to define the position in the layout editor
- Automatically setup up the startbit for Intel or Motorola byte order

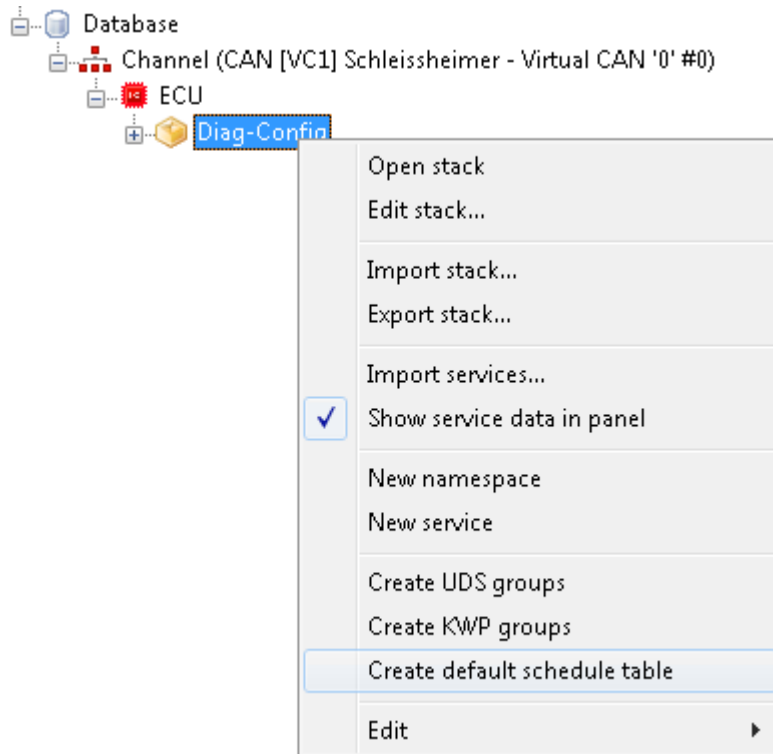
Working with hex editor



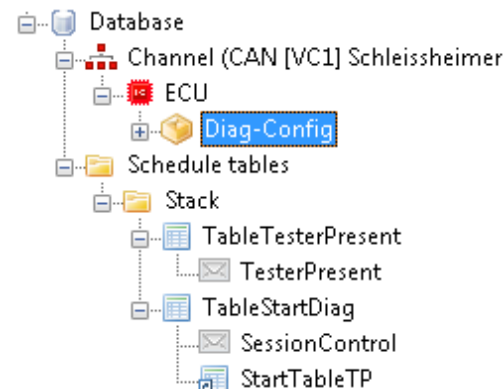
- Open the hex editor to see data/payload in a separate window
- The hex editor can be opened for the request, the response or for every service parameter



Tester present and session control

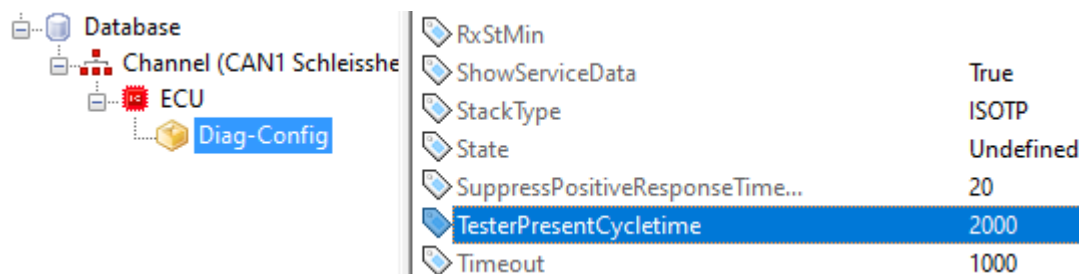


- To automate tester present and session control you can create a default scheduler table
- The table **TableStartDiag** is executed on simulation start, changes the session and starts the table **TableTesterPresent** to transmit the tester present cyclically

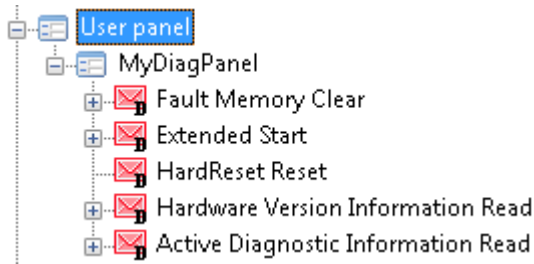


Tester present by property

- Setting a cycle time for
TesterPresendCycletime CanEasy will start
sending of Tester present after the first
request
- Configure RequestIdFunctional to allow
sending Tester present with another CAN-ID



Create user panels



- Drag & drop diagnostic services or single parameters to the "User panel" to create a panel that contains services you often need
- Response parameters are read only
- Changing payload works only with activated "Edit mode"

MyDiagPanel

Fault Memory Clear
14 00 00 00
Response Undefined

GroupOfDTC
0x0 : Emission-related systems

Extended Start
10 03
Response Undefined

0x0 P2_CAN_ECU_max
0x0 P2s_CAN_ECU_max

HardReset Reset
11 01
Response Undefined

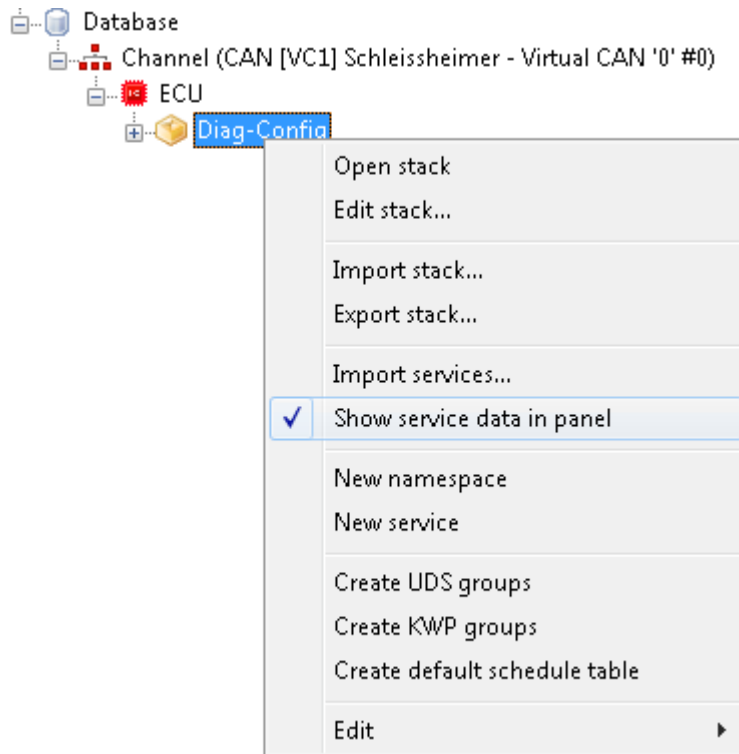
Hardware Version Information Read
22 f1 50
Response Undefined

0x00 Hw' - year
0x00 Hw' - week
0x00 Hw' - patch level

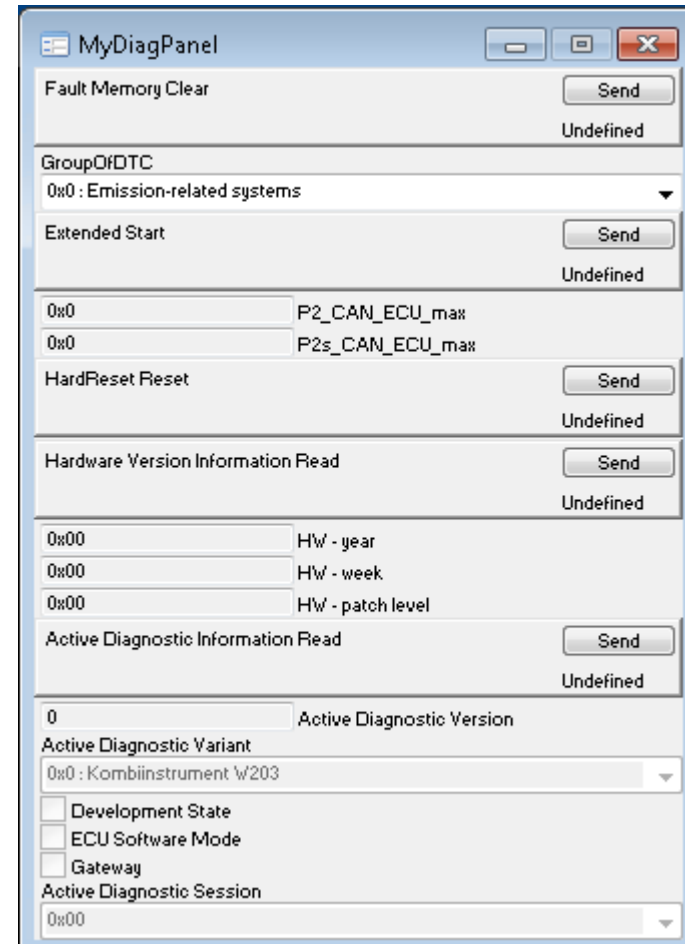
Active Diagnostic Information Read
22 f1 00
Response Undefined

0 Active Diagnostic Version
Active Diagnostic Variant
0x0 : Kombiinstrument 'w/203
☐ Development State
☐ ECU Software Mode
☐ Gateway
Active Diagnostic Session
0x00

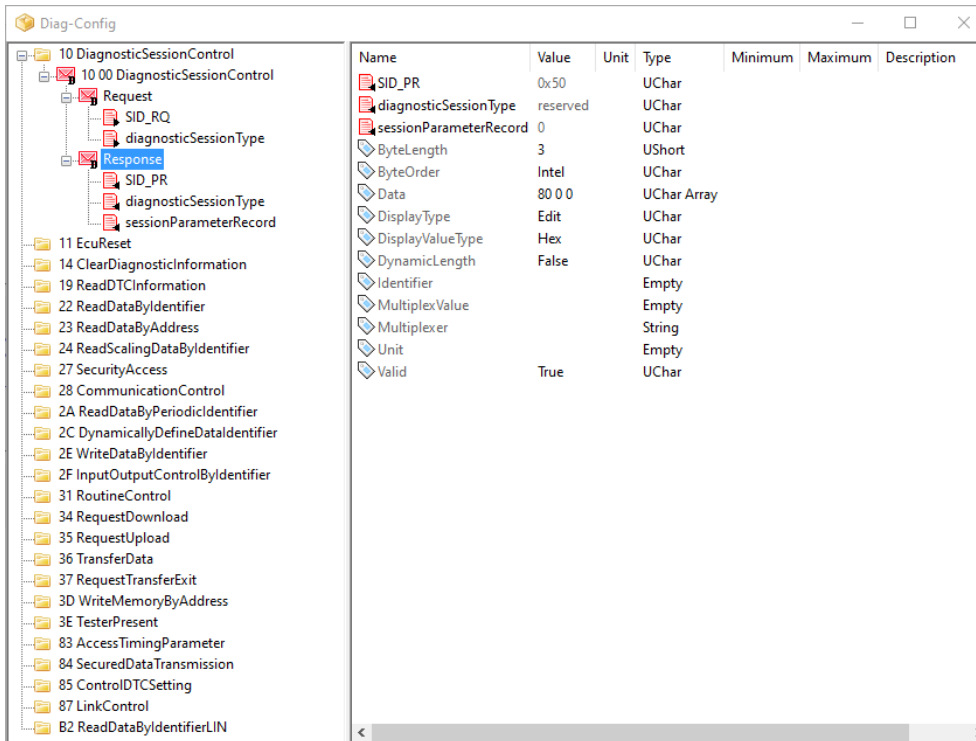
Hide payload in panels



- Use the setting "Show service data in panel" to hide the payload and to get smaller panels



Open services in new view

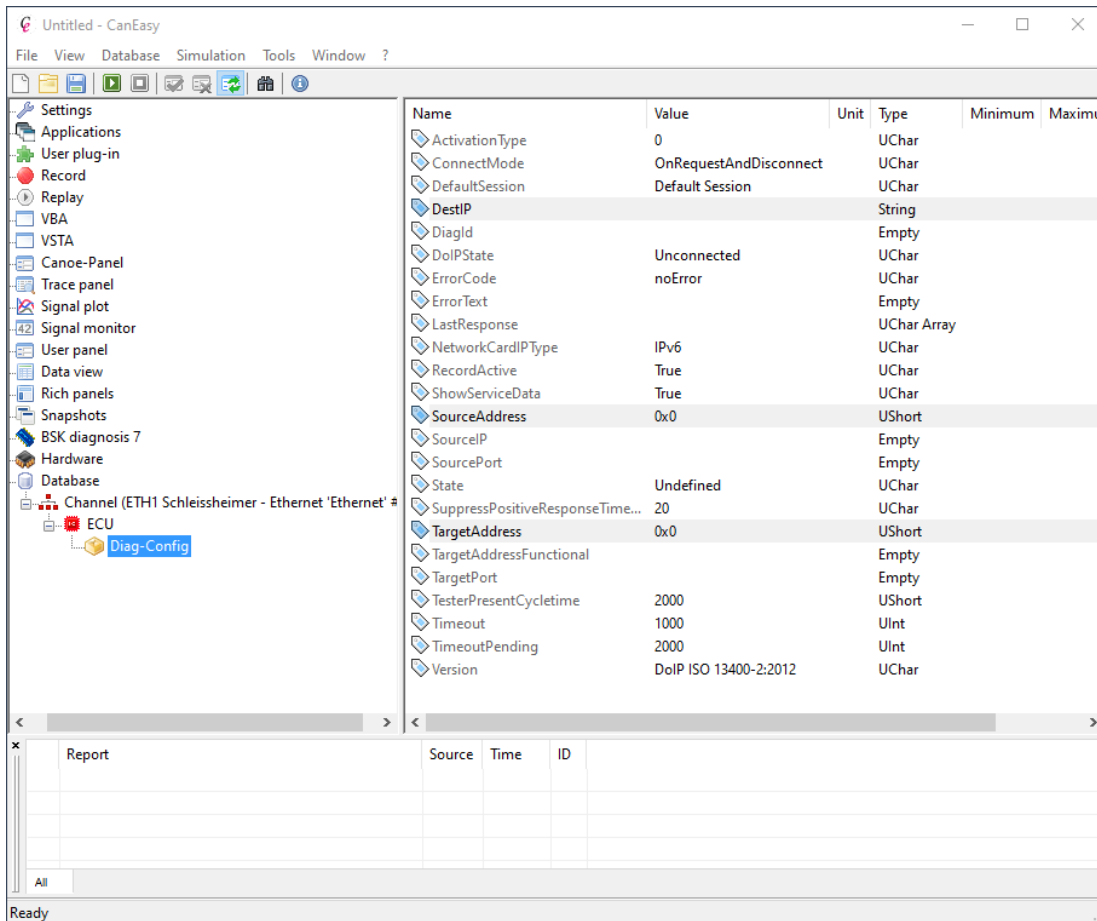


- Use "Open tree view" from context menu of the diag config or double click to open a new tree view
- Double click on a service will send it directly

Simulate UDS functions

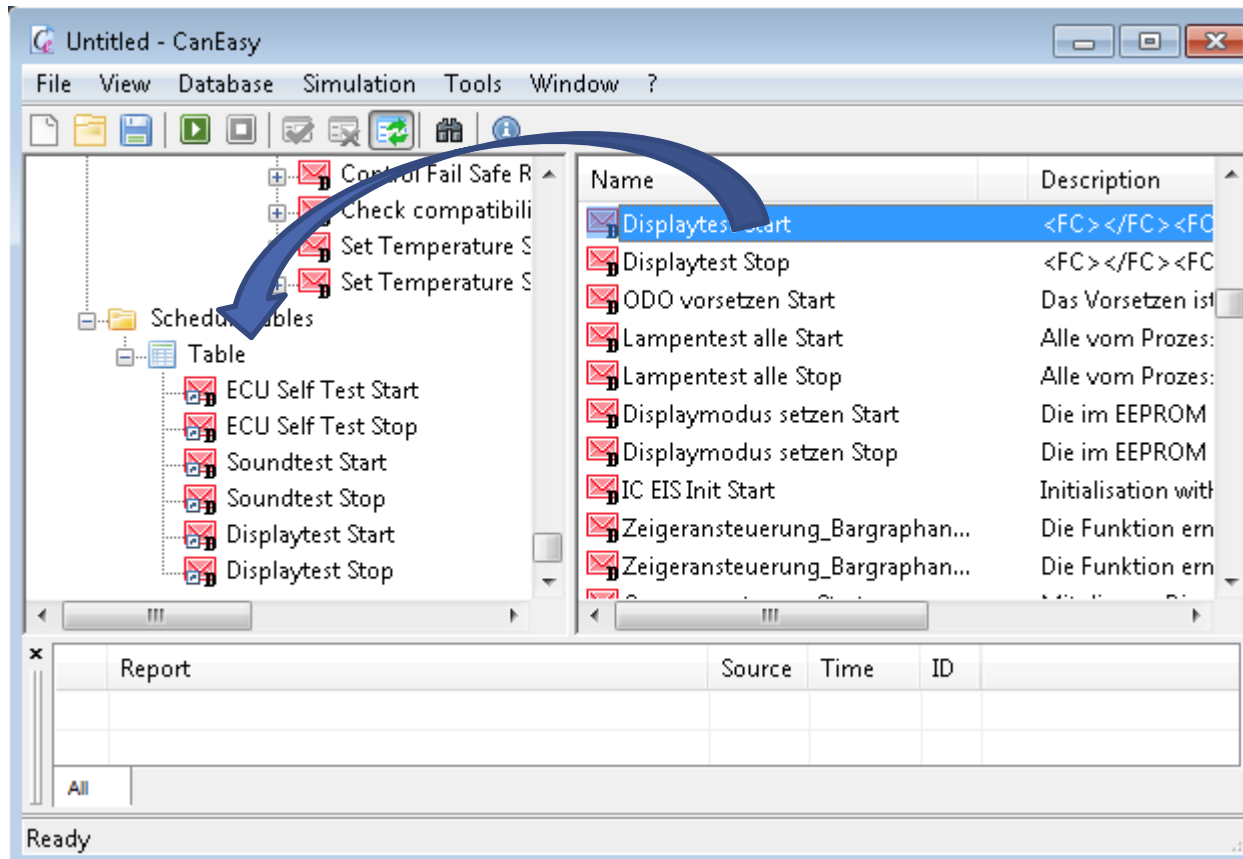
- Instead of working as master CanEasy can be used to simulate a slave
- If the ECU is configured as simulated CanEasy will send response on a first frame
- Use the API of the stack (diag-config) to get transmission events and send response to a UDS requests

DoIP – UDS over Ethernet



- Create a diag config under an ETH channel to use DoIP protocol
- Setup DestIP, SourceAddress and TargetAddress

Automate requests with Scheduler



- If you need a sequence of services just drag & drop them to a scheduler table

Thank you for your attention!
