

# AUTOSAR DTC Helper

This confluence page was design to help and share some knowledge about the way of work with the DTC in AUTOSAR.

All base on FCA-R1 & FPDM Project.

A Special Acknowledgment to

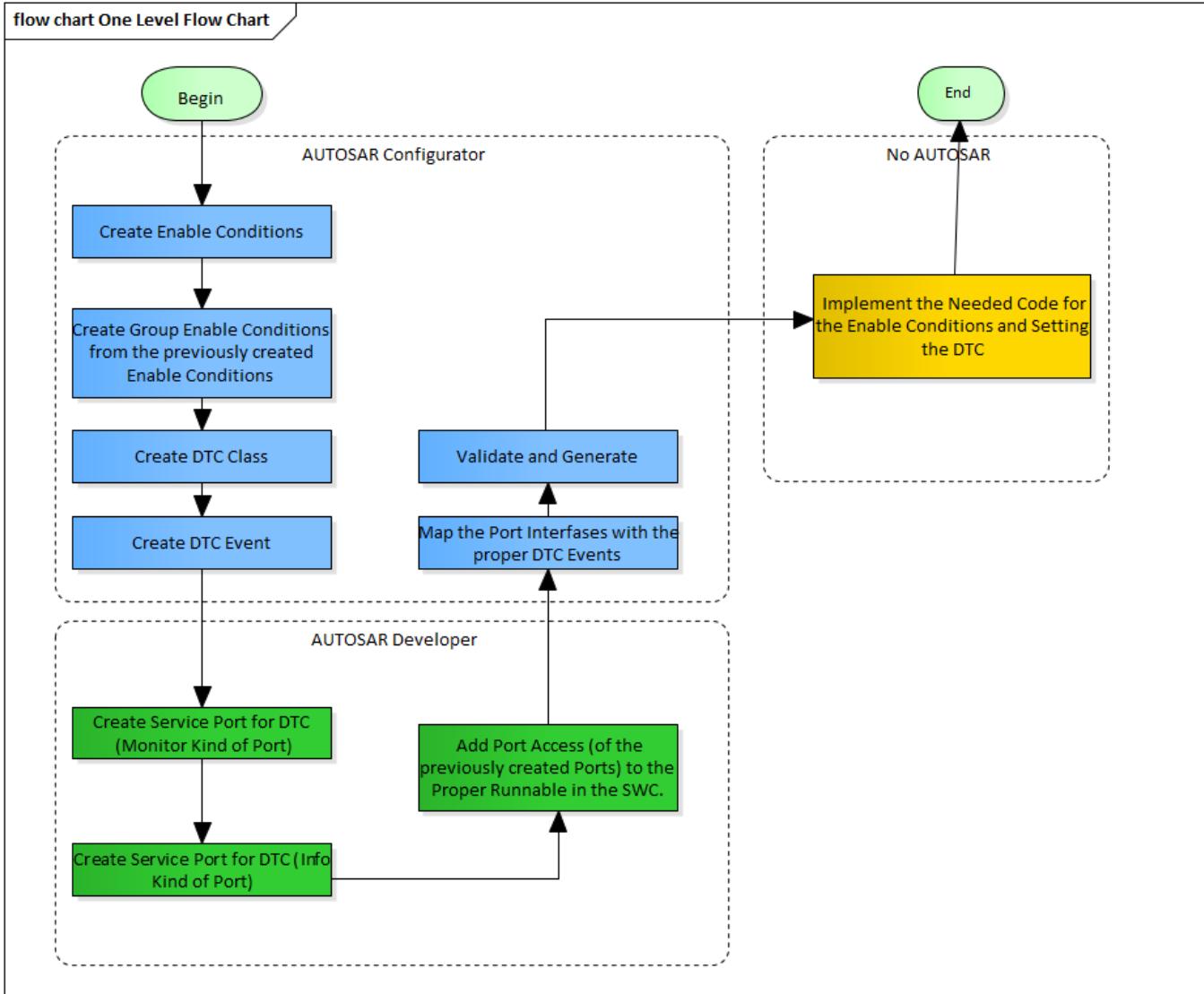
1. [Daza, Jorge \(Queretaro Design Center\)](#): Original Owner of the Material.

- IOC Side of DTC Implementation
  - Workflow
  - Step-by-Step Process
    - Create Enable Conditions
    - Create Group Enable Conditions
    - Create DTC Class
    - Create DTC Event
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    - Add needed Port Access in SWC Runnables
    - Service Port for Enable Conditions
    - Add needed Port Access in SWC Runnables for the Enable Conditions
    - Map Service Port with the DTC Events
      - Same for the EventInfo of the DTC
    - Map Enable Conditions Service Port with the SWC Ports.
    - Validate and Generate
    - Implement Code for Enable Conditions
    - Implement Code for Set DTC
  - IOC Periodically Monitoring Function
  - IOC DTC List and Utility
    - DTC Utility
    - DTC List
- SOC Side of DTC Implementation
  - Troubleshoot
  - AUTOSAR DTC Training

## IOC Side of DTC Implementation

### Workflow

This is the common workflow for the DTC in AUTOSAR, In case of any of the step were already fulfilled, please jump to the next one, but every one of them shall be checked and completed.



## Step-by-Step Process

The full process to create add the DTC is the following:

### Create Enable Conditions

To create the needed EnableConditions In the AUTOSAR Cfg under:

Basic Editor DEM DemGeneral DemEnableConditions +Sign

- For the EnableCondition Id, can be used the default one assigned automatically by AUTOSAR, or use a USER Defined (Using right click on the enable condition and change the assignment).

Screenshot of the Basic Editor showing the ECU Software Components tree on the left and a table view on the right.

**ECU Software Components Tree:**

- Base Services
- Communication
- Diagnostics
  - Diagnostic Data Identifiers
  - Diagnostic Event Data
  - Diagnostic Events
  - J1939 Diagnostic Communication
  - Production Error Handling
- Memory
- Mode Management
- Network Management
- Runtime System
  - Runtime System General
  - ECU Software Components
  - Module Internal Behavior
  - OS Configuration
  - Task Mapping
  - Add Component Connection
  - Add Data Mapping
  - Add Memory Mapping
  - Add Task Mapping

**Table View (DemEnableConditions):**

DemEnableConditions	EnableCondition Id	EnableCondition Status
DTC_BATT_VOLTAGE_IN_RANGE	1	✓
DTC_ENABLE_CONDITION_5Sec_TIMER	2	✓
DTC_NETWORK_CONFIG_STATUS	3	✓
DTC_NO_ACTIVE_BUSOFF_FAULT	4	✓
DTC_POWER_MODE_IGN_RUN	5	✓
DTC_NODE_PRESENT_AMP	6	✓
DTC_NODE_PRESENT_BCM	7	✓
DTC_NODE_PRESENT_BSM	8	✓
DTC_NODE_PRESENT_DTV	9	✓
DTC_NODE_PRESENT_ECM	10	✓
DTC_NODE_PRESENT_EVCU	11	✓
DTC_NODE_PRESENT_IPC	12	✓
DTC_NODE_PRESENT_PAM	13	✓

Screenshot of the Basic Editor showing the ECU Software Components tree on the left and a table view on the right.

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DTC_NETWORK_CONFIG_STATUS	3	✓
DTC_NO_ACTIVE_BUSOFF_FAULT	4	✓
DTC_NODE_PRESENT_AMP	6	✓
DTC_NODE_PRESENT_BCM	7	✓
DTC_NODE_PRESENT_BSM	8	✓
DTC_NODE_PRESENT_DTV	9	✓
DTC_NODE_PRESENT_ECM	10	✓
DTC_NODE_PRESENT_EVCU	11	✓
DTC_NODE_PRESENT_IPC	12	✓
DTC_NODE_PRESENT_PAM	13	✓
DTC_POWER_MODE_IGN_RUN	5	✓

## Create Group Enable Conditions

To Group the previously created EnableConditions in the AUTOSAR CFG:

Basic Editor DEM DemGeneral DemEnableConditionsGroups +Sign

- Created the needed group for the DTC to be implemented.

**Configuration Editors**

- Base Services**
  - Communication
  - Diagnostics
    - Diagnostic Data Identifiers
    - Diagnostic Event Data
    - Diagnostic Events
    - IIS99 Diagnostic Communication
    - Production Error Handling
  - Add Diagnostic Data ID Assistant
  - Automap Diagnostic Objects
  - Setup Event Memory Blocks
- Memory
- Mode Management
- Network Management
- Runtime System
  - Runtime System General
  - ECU Software Components
  - Module Internal Behavior
  - OS Configuration
  - Task Mapping
  - Add Component Connection
  - Add Data Mapping
  - Add Memory Mapping
  - Add Task Mapping

**Basic Editor**

**ECU Software Components** > **Dem** > **DemGeneral** > **DemEnableConditionGroups** > **All\_Enable\_Condition\_Group**

**EnableCondition Ref**

- <empty>**

0 of 13 elements selected. Sorting by <DemEnableConditionGroups>

**Basic Editor**

**ECU Software Components** > **Dem** > **DemGeneral** > **DemEnableConditionGroups** > **DemEnableConditionGroup**

**Short Name:** **DemEnableConditionGroup**

**EnableCondition Ref**

- <empty>**

**ECU Software Components**   **Diagnostic Events**   **Basic Editor**

<Filter>

- > Adc
- > BswM
- > Can
- > CanIf
- > CanSm
- > CanTp
- > CanTcv\_001
- > CddFlat
- > Com
- > ComM
- > Crc
- > Dcm
- > Dem
  - > DemConfigSet
  - > DemDTCClass
  - > DemEventParameters
  - > DemJ1939NodeAddress
  - > DemPidClass
- > DemGeneral
  - > DemCallbackDTCStatusChangeds
  - > DemClients
  - > DemDataClass
  - > DemDidClass
- > DemEnableConditionGroups
  - > All\_Enable\_Condition\_Group
  - > Enable\_Conditions\_BatVoltageSts
  - > Enable\_Conditions\_BatVoltageSts\_and\_NetworkCon...
  - > Enable\_Conditions\_BatVoltageSts\_and\_PowerModeSt...
  - > General\_Enable\_Cond
  - > LOC\_AMP\_EnableConditionGroup
  - > LOC\_BCM\_EnableConditionGroup
  - > LOC\_BSM\_EnableConditionGroup
  - > LOC\_DTV\_EnableConditionGroup
  - > LOC\_ECM\_PCM\_EnableConditionGroup
  - > LOC\_EVCU\_EnableConditionGroup
  - > LOC\_IPC\_EnableConditionGroup
  - > LOC\_PAM\_EnableConditionGroup
- > DemnableConditions
- > DemExtendedDataClass

<Filter>

DemEnableConditionGroups	EnableCondition Ref
All_Enable_Condition_Group	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_POWER_MODE_IGN_RUN
Enable_Conditions_BatVoltageSts	DTC_BATT_VOLTAGE_IN_RANGE
Enable_Conditions_BatVoltageSts_and_NetworkCon...	DTC_BATT_VOLTAGE_IN_RANGE, DTC_NETWORK_CONFIG_STATUS
Enable_Conditions_BatVoltageSts_and_PowerModeSt...	DTC_BATT_VOLTAGE_IN_RANGE, DTC_POWER_MODE_IGN_RUN
General_Enable_Cond	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NODE_PRESENT_AMP, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN
LOC_AMP_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NODE_PRESENT_AMP, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN
LOC_BCM_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NODE_PRESENT_BCM, DTC_NO_ACTIVE_BUSOFFFAULT
LOC_BSM_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN, DTC_NODE_PRESENT_BSM
LOC_DTV_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN, DTC_NODE_PRESENT_DTV
LOC_ECM_PCM_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN, DTC_NODE_PRESENT_ECM
LOC_EVCU_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN, DTC_NODE_PRESENT_EVCU
LOC_IPC_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN, DTC_NODE_PRESENT_IPC
LOC_PAM_EnableConditionGroup	DTC_BATT_VOLTAGE_IN_RANGE, DTC_ENABLE_CONDITION_5Sec_TIMER, DTC_NETWORK_CONFIG_STATUS, DTC_NO_ACTIVE_BUSOFFFAULT, DTC_POWER_MODE_IGN_RUN, DTC_NODE_PRESENT_PAM

0 of 13 elements selected. Sorting by <DemEnableConditionGroups>

## Create DTC Class

Note: This shall be added at the moment of the Import of the \*.CDD File, but here is the full process.

Create the DTC Class for the DTC to be implement in the AUTOSAR CFG:

Basic Editor DEM DemConfigSet DemDTCClass +Sign

**Configuration Editors**

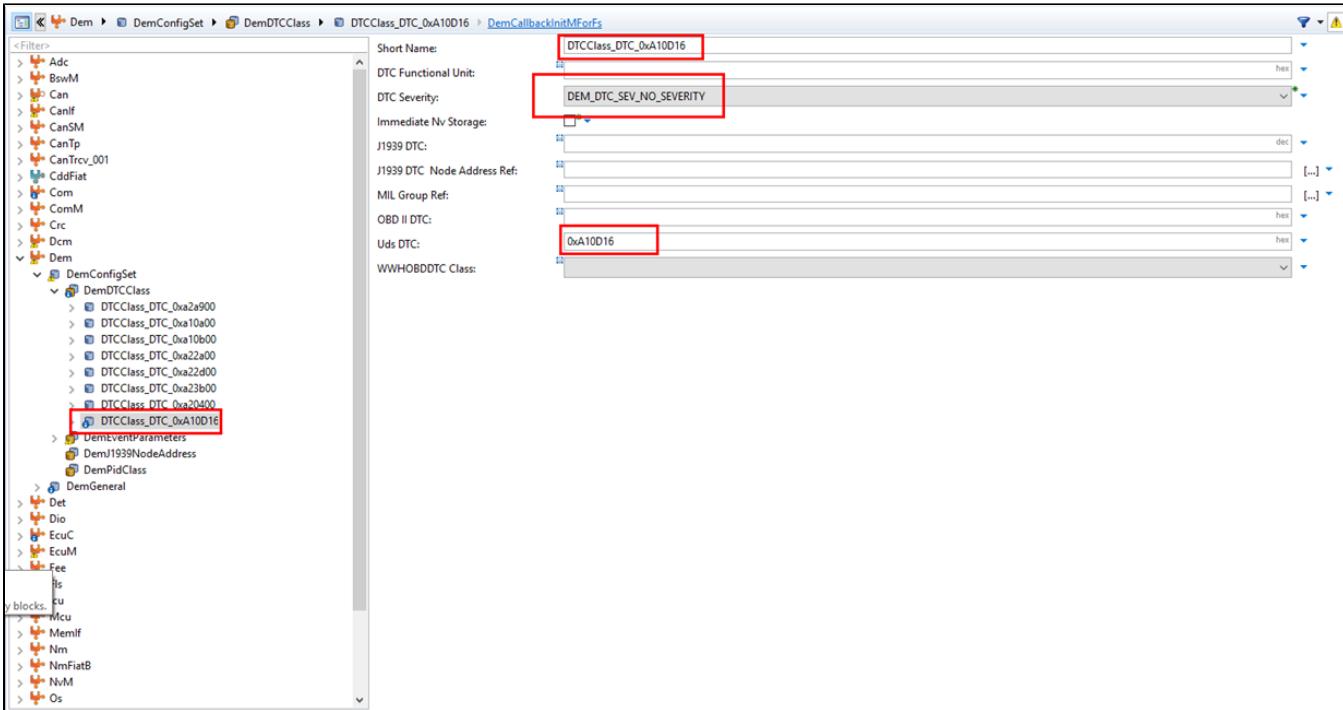
<Filter>

- > Base Services
- > Communication
- > Diagnostics
  - > Diagnostic Data Identifiers
  - > Diagnostic Event Data
  - > Diagnostic Events
  - > J1939 Diagnostic Communication
  - > Production Error Handling
- > Add Diagnostic Data ID Assistant
- > Automap Diagnostic Data Objects
- > Setup Event Memory Blocks
- > Memory
- > Mode Management
- > Network Management
- > Runtime System
  - > Runtime System General
  - > ECU Software Components
  - > Module Internal Behavior
  - > OS Configuration
  - > Task Mapping
- > Add Component Connection
- > Add Data Mapping
- > Add Memory Mapping
- > Add Task Mapping

<Filter>

DemDTCClass	DTC Functional Unit	DTC Severity	Immediate Nv Storage	J1939 DTC	J1939 DTC Node Address Ref	MIL Group Ref
DTC_Class_DTC_0xa2a900	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa10900	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa10b00	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa10016	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa22a00	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa22d00	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa23a00	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa23b00	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xa20400	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■
DTC_Class_DTC_0xA10D16	DEM_DTC_SEV_NO_SEVERITY *	■	■	■	■	■

1 of 8 elements selected. Sorting by <DemDTCClass>



## Create DTC Event

Create the DTC Event for the DTC to be implement in the AUTOSAR CFG:

Diagnostics   Diagnostics Events   Events   +Sign

- For better visualization look for the new event created on the side panel (below Event Tabs) and click the New Event to change from the able view to the single view.

Event Kind	Monitor Port	Info Port	Event Significance	Event Priority	Event Destination
SWC	Event_DTC_DemEventP...	EvtInfo_DTC_RegS_WRITE_VERIFY	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem2x000	EvtInfo_DTC_Dem2x000	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem10x00	EvtInfo_DTC_Dem10x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem10x00	EvtInfo_DTC_Dem10x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem22x00	EvtInfo_DTC_Dem22x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem22x00	EvtInfo_DTC_Dem22x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem23x00	EvtInfo_DTC_Dem23x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem23x00	EvtInfo_DTC_Dem23x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem24x00	EvtInfo_DTC_Dem24x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_DTC_Dem24x00	EvtInfo_DTC_Dem24x00	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_001	EvtInfo_FLS_Dem_001	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_002	EvtInfo_FLS_Dem_002	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_003	EvtInfo_FLS_Dem_003	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_004	EvtInfo_FLS_Dem_004	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_005	EvtInfo_FLS_Dem_005	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_006	EvtInfo_FLS_Dem_006	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_FLS_Dem_007	EvtInfo_FLS_Dem_007	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_INT_CLK_FAILURE	EvtInfo_INT_CLK_FAILURE	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_INT_CLK_FAILURE_001	EvtInfo_INT_CLK_FAILURE_001	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_INT_CLK_FAILURE_002	EvtInfo_INT_CLK_FAILURE_002	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_INT_CLK_FAILURE_003	EvtInfo_INT_CLK_FAILURE_003	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_INT_CLK_FAILURE_004	EvtInfo_INT_CLK_FAILURE_004	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_INT_CLK_FAILURE_005	EvtInfo_INT_CLK_FAILURE_005	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
BSW	EvtInfo_Port_Dem	EvtInfo_Port_Dem	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_PWM_Dem1	EvtInfo_PWM_Dem1	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_PWM_Dem2	EvtInfo_PWM_Dem2	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_SPI_Dem1	EvtInfo_SPI_Dem1	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC
SWC	Event_SPI_Dem2	EvtInfo_SPI_Dem2	2	2	DEM_DTC_ORIGIN_PRIMARY_MEMC

Add the needed Configuration and values for the Event (The following images are in Single view)

ECU Software Components Diagnostic Events Basic Editor

Events > DTC\_0xA10D16

**Overview**

Name: DTC\_0xA10D16  
Event Kind: SWC  
Monitor Port: Event\_DTC\_0xA10D16  
Info Port: ExtInfo\_DTC\_0xA10D16  
Event Significance: 2  
Event Priority: 2  
Enable Condition Group Ref: /ActiveEcuC/Dem/DemGeneral/Enable\_Conditions\_BatVoltageSts  
Storage Condition Group Ref:  
Operation Cycle Ref: /ActiveEcuC/Dem/DemGeneral/IgnitionCycle  
Failure Cycle Ref: /ActiveEcuC/Dem/DemGeneral/IgnitionCycle  
Failure Cycle Counter Threshold: 0  
Event Destination: DEM\_DTC\_ORIGIN\_PRIMARY\_MEMORY

Select a DTC or clear the selected DTC.

UDS DTC: 0xA10D16  
DTC Group:  
DTC Severity: DEM\_DTC\_SEV\_NO\_SEVERITY  
DTC Functional Unit:

**Callbacks**  
**Event Pre-Debouncing**  
**Freeze Frames**  
**Extended Data Records**  
**Aging**  
**Indicators**

**Callbacks**

Callback Init Monitor For Event: None  
Callback Clear Event Allowed: None  
Callback Event Data Changed: None

**Callback Event Status Changed**

**Event Pre-Debouncing**

Algorithm: DemDebounceCounterBased  
Counter Increment Step Size: 127  
Counter Decrement Step Size: 128  
Counter Passed Threshold: -128  
Counter Failed Threshold: 127  
Counter Storage:   
Counter Behavior: DEM\_DEBOUNCE\_FREEZE  
Counter Jump Down:   
Counter Jump Down Value: 0  
Counter Jump Up:   
Counter Jump Up Value: 0  
Callback Get FDC: None  
Time Failed Threshold [ms]:  
Time Passed Threshold [ms]:

**Freeze Frames**

Maximum Number of Snapshot Records:	2	dec
Prestorage Supported:	<input type="checkbox"/>	
Snapshot Record:	/ActiveEcuC/Dem/DemGeneral/FreezeFrameClass_c416ad8f	[...]
Snapshot Record Number Class:	<input type="text"/>	[...]

**Snapshot Record Numbers**

---

**Extended Data Records**

Extended Data Class:	/ActiveEcuC/Dem/DemGeneral/ExtendedDataClass_83dcefb7	[...]
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**Extended Data Records**

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**Aging**

Aging Allowed:	<input checked="" type="checkbox"/>	
Aging Cycle Ref:	/ActiveEcuC/Dem/DemGeneral/IgnitionCycle	
Aging Cycle Counter:	40	dec
Event Latch Test Failed:	<input type="checkbox"/>	

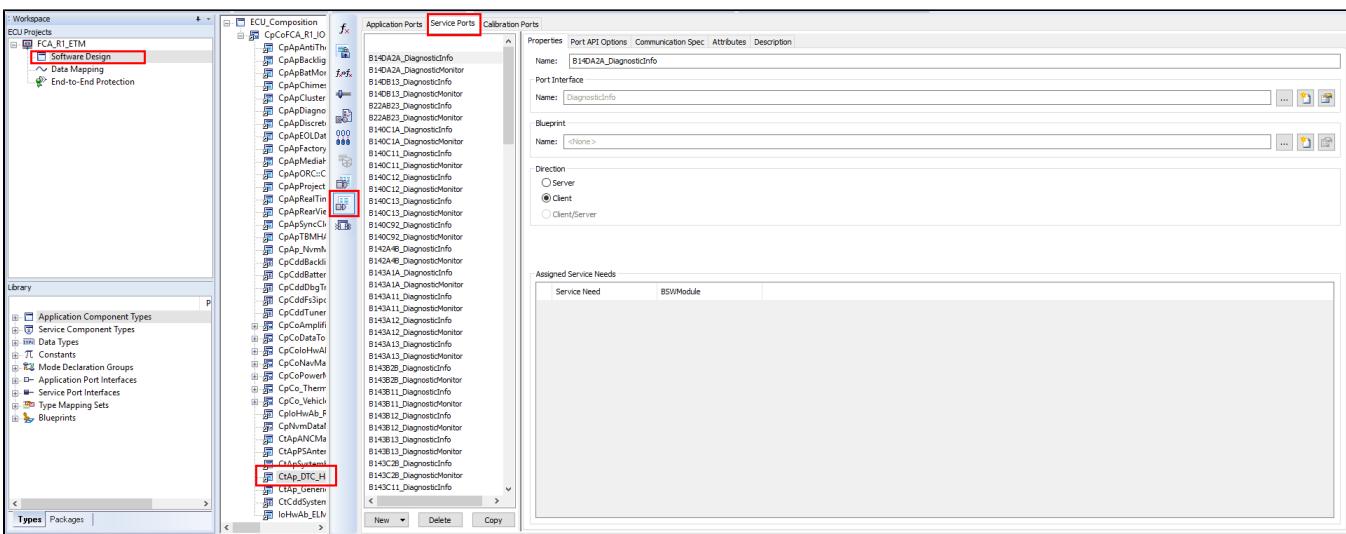
**Indicators**

+ IndicatorAttribute\_WarningIndicator
 

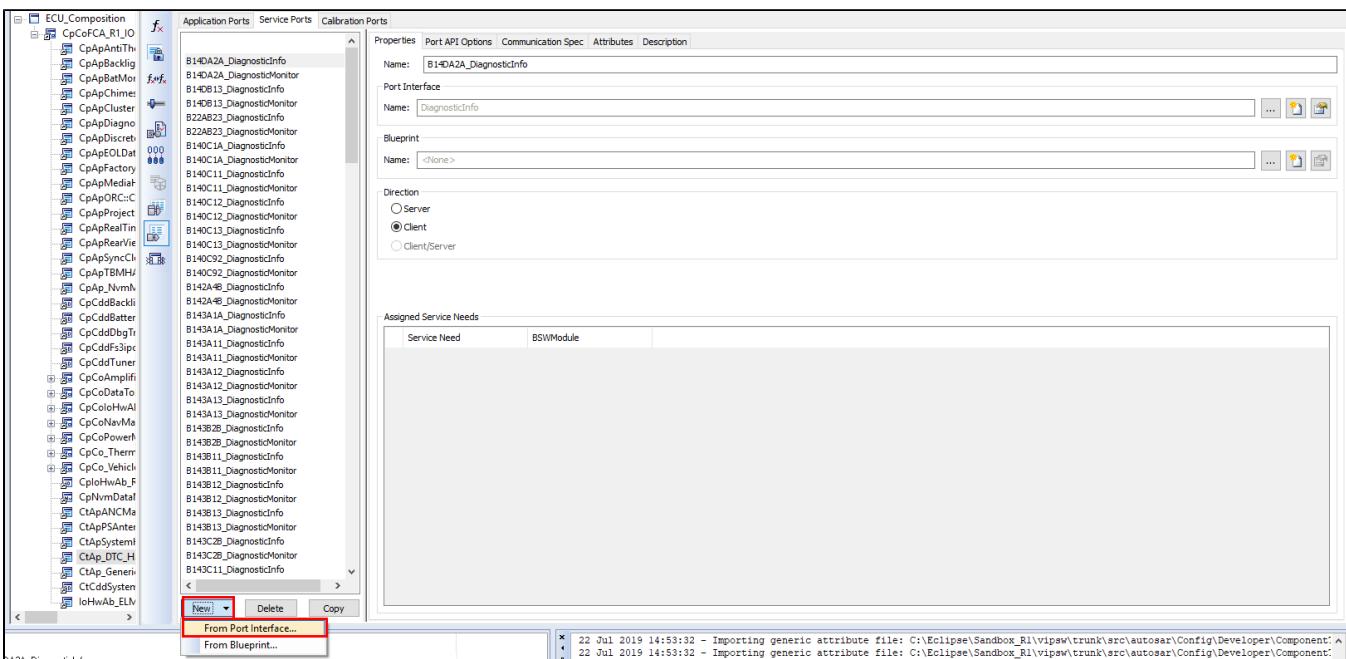
Indicator Name:	IndicatorAttribute_WarningIndicator	
Indicator Ref:	/ActiveEcuC/Dem/DemGeneral/WarningIndicator	
Indicator Behavior:	DEM_INDICATOR_CONTINUOUS	
Indicator Healing Cycle Ref:	/ActiveEcuC/Dem/DemGeneral/PowerCycle	
Indicator Healing Cycle Counter Threshold:	3	dec
Indicator Failure Cycle Ref:	<input type="text"/>	
Indicator Failure Cycle Source:	DEM_FAILURE_CYCLE_EVENT	
Indicator Failure Cycle Counter Threshold:	<input type="text"/>	

## Create Monitor Service Port for DTC

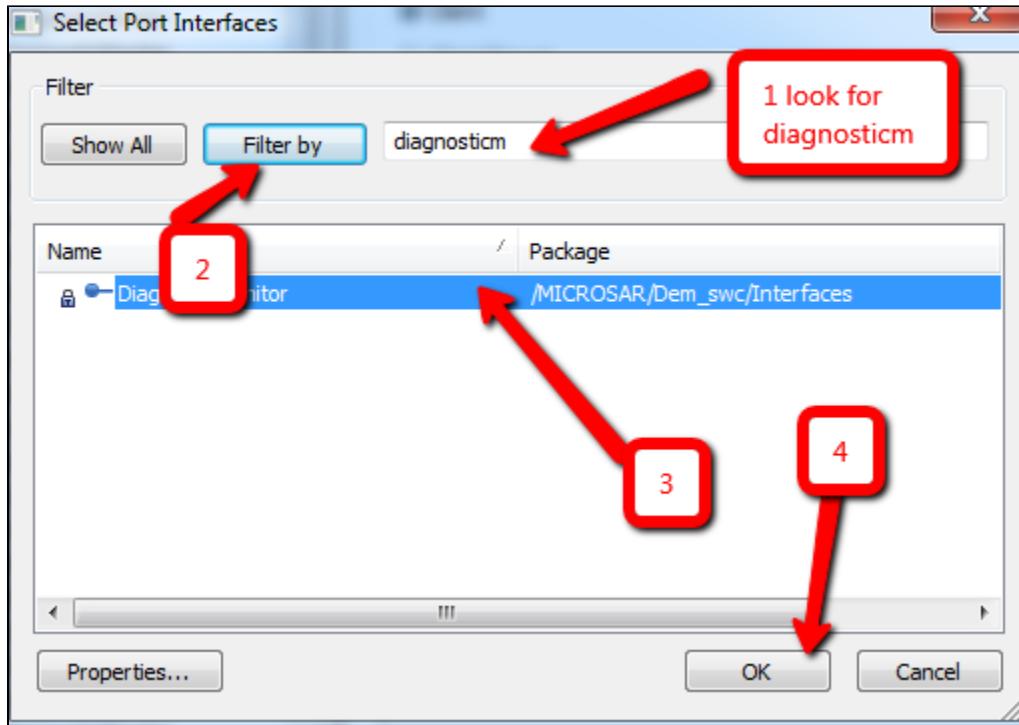
Select the CtAp\_DTC\_Handler, later select the Service Port Tab



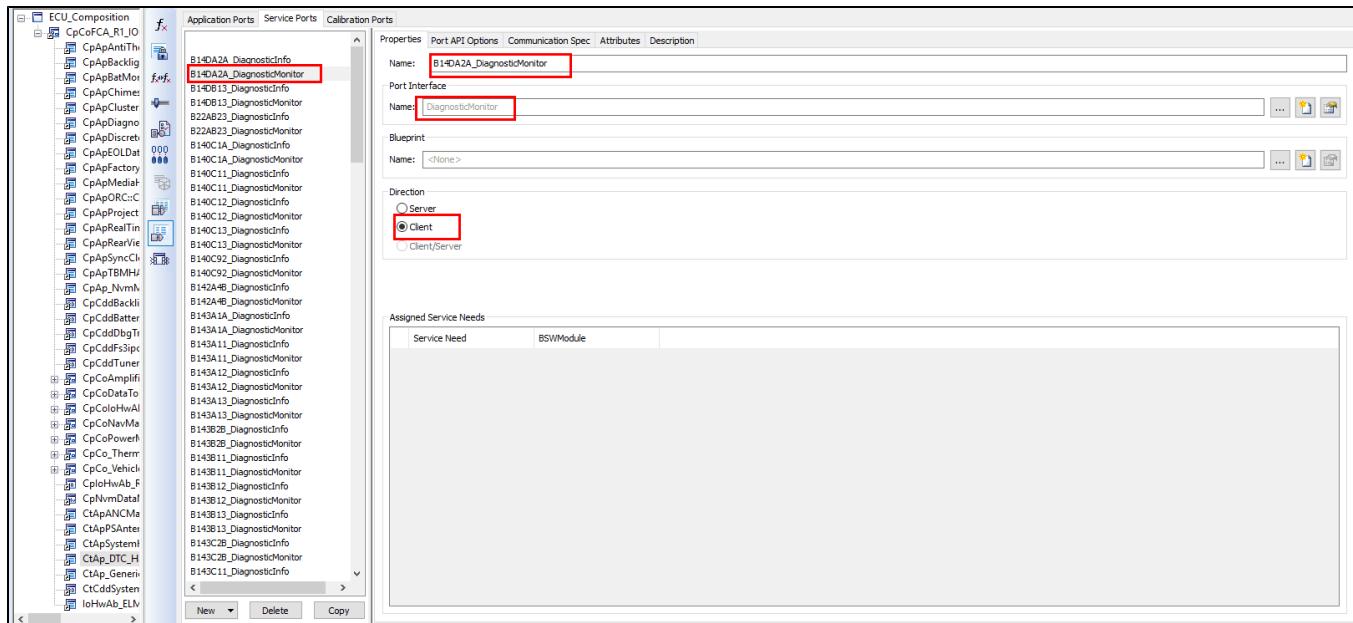
### Create new Service Port from Port Interface



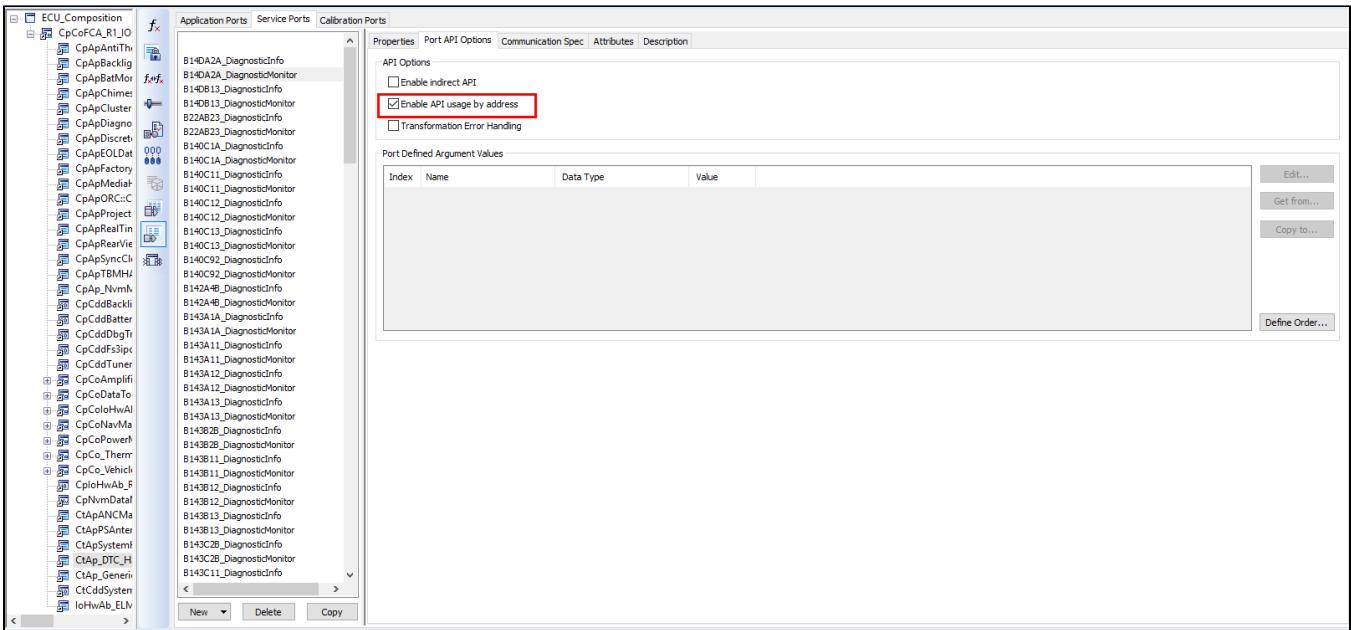
### Filter the Diagnostic Monitor



Change the Name of the Service port, normally the DTC number should be added

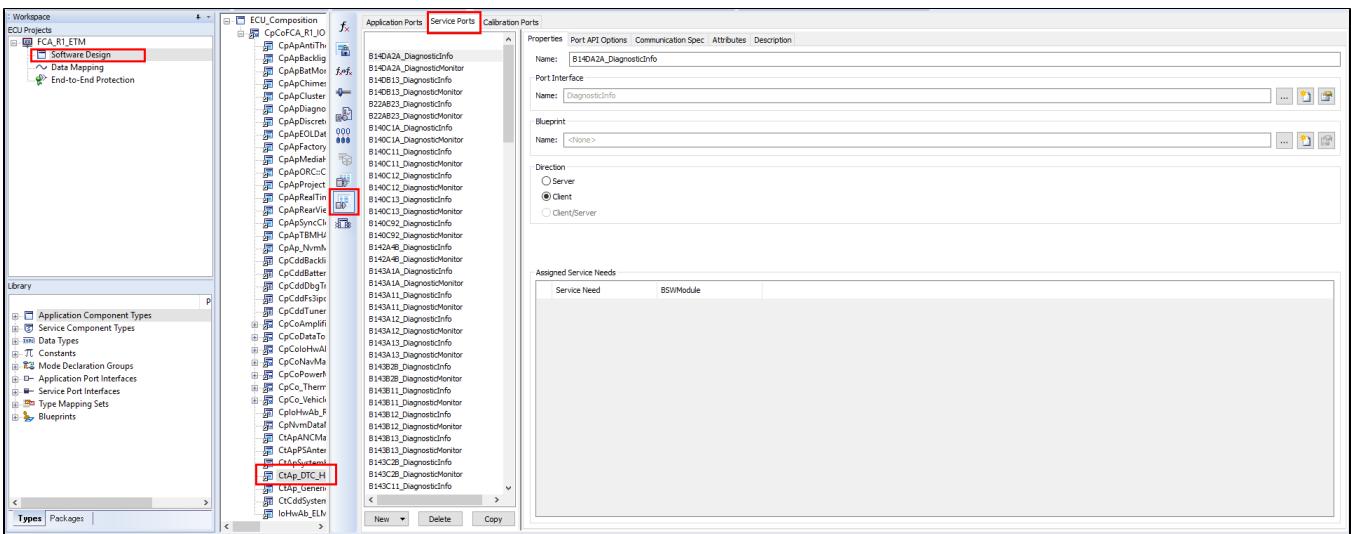


Enable the API Usage by Address Option



## Create Information Service Port for DTC

Select the CtAp\_DTC\_Handler, later select the Service Port Tab



Create Service Port from Port Interface

The screenshot shows a software interface for managing ECU ports. On the left, there is a tree view of ECU components:

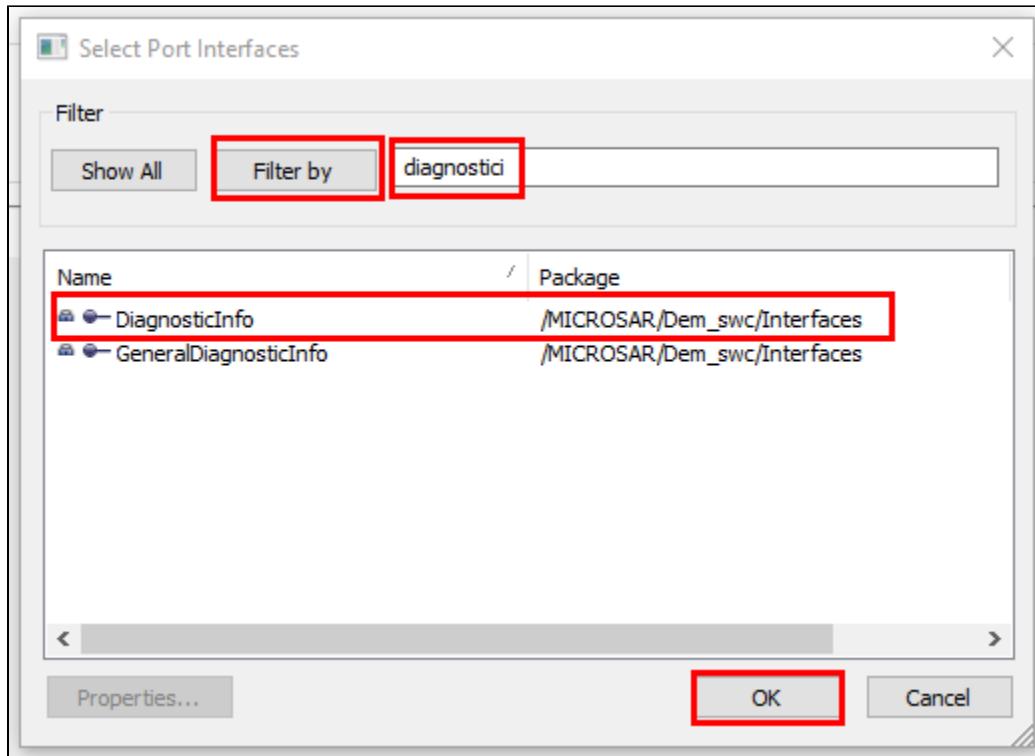
- ECU\_Composition
  - CpCoFCA\_R1\_IO
    - CpApAntiTh
    - CpApBacklig
    - CpApBatMor
    - CpApChimes
    - CpApCluster
    - CpApDiagno
    - CpApDiscret
    - CpApEOLDat
    - CpApFactory
    - CpApMediah
    - CpApORC::C
    - CpApProject
    - CpApRealTin
    - CpApRearVie
    - CpApSyncCli
    - CpApTBMH4
    - CpAp\_NvmN
    - CpCddBackli
    - CpCddBatter
    - CpCddDbgTr
    - CpCddFs3ipc
    - CpCddTuner
    - CpCoAmplifi
    - CpCoDataTo
    - CpColoHwAl
    - CpCoNavMa
    - CpCoPowerh
    - CpCo\_Therm
    - CpCo\_Vehicl
    - CploHwAb\_F
    - CpNvmDataI
    - CtApANCMa
    - CtApPSAnter
    - CtApSystemI
    - CtAp\_DTC\_H**
    - CtAp\_Generi
    - CtCddSystem
    - IoHwAb\_ELM

The right side of the interface is divided into several sections:

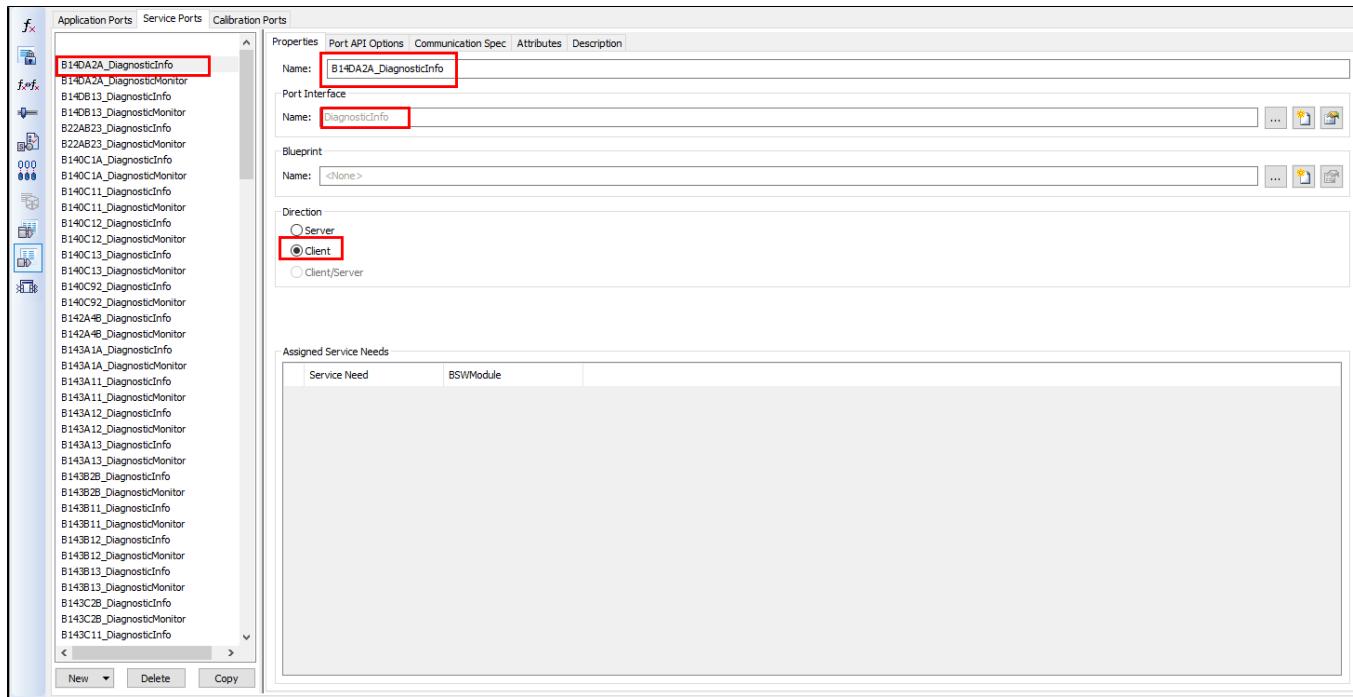
- Application Ports** tab is selected.
- Properties** tab is active.
- Name:** B14DA2A\_Diagnos
- Port Interface** section:
  - Name:** DiagnosticInfo
- Blueprint** section:
  - Name:** <None>
- Direction** section:
  - Server
  - Client
  - Client/Server
- Assigned Service Needs** section (empty).

A context menu is open over the CtAp\_DTC\_H item in the tree view, showing options: **New**, **Delete**, **Copy**, **From Port Interface...**, and **From Blueprint...**. The **From Port Interface...** option is highlighted with a red box.

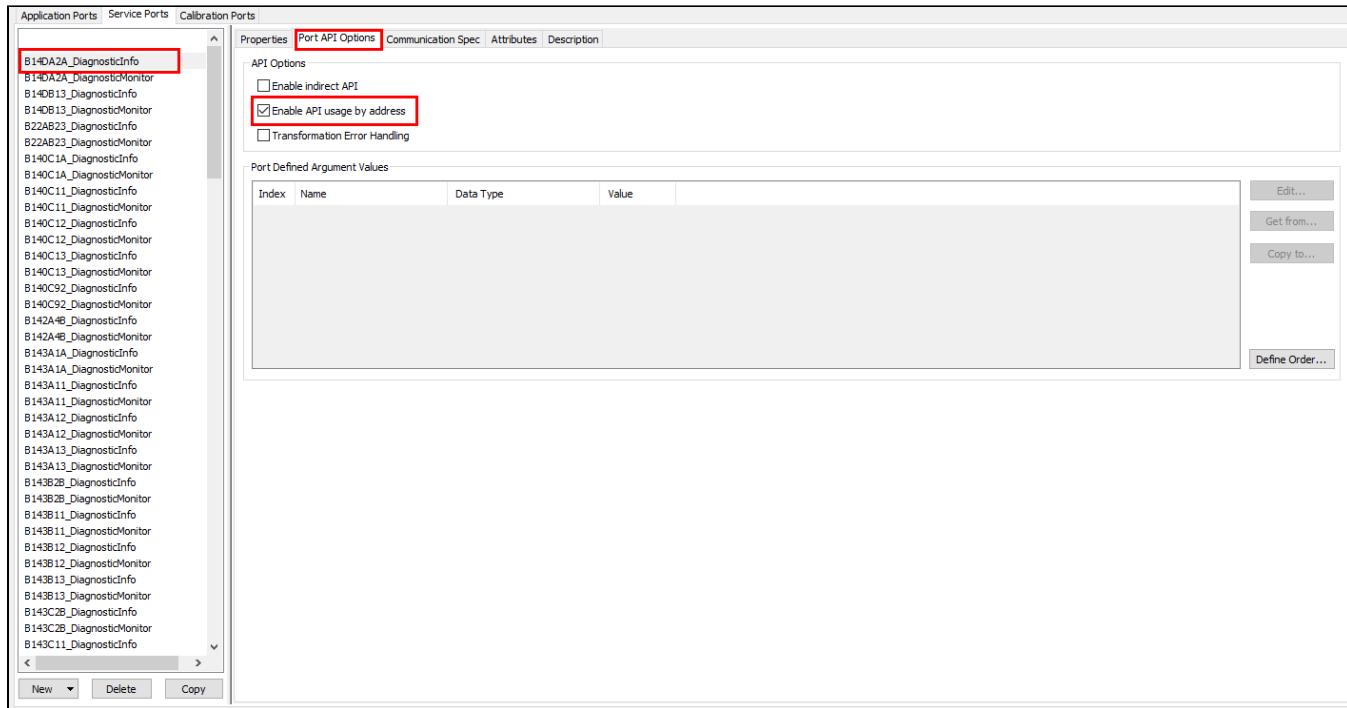
Filter the Diagnostic Info



Change the Name of the Service port, normally the DTC number should be added

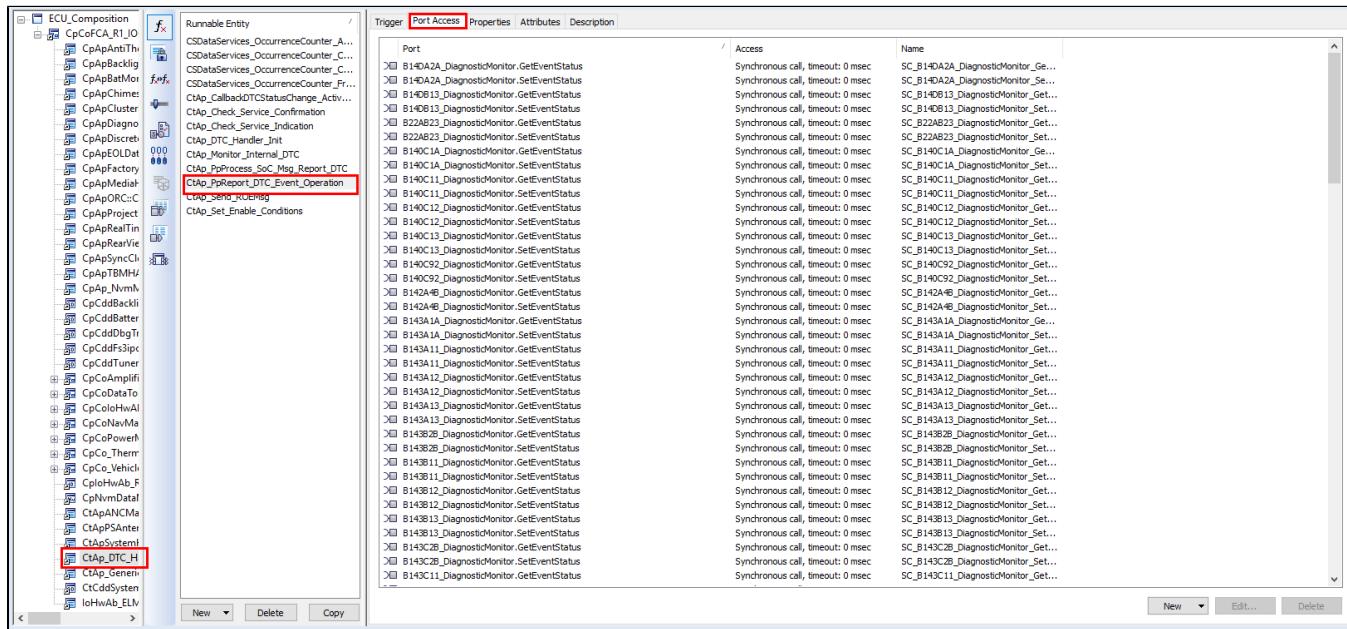


Enable the API Usage by Address Option



## Add needed Port Access in SWC Runnables

Select the Runnable CtAp\_PpReport\_DTC\_Event\_Operation runnable to configure the proper access ports



Invoke the operation

The screenshot shows the PTC Integrity interface. On the left, there's a tree view of Runnable Entities under a project named 'C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\autosar\config\Developer'. A specific entity, 'CTap\_PtReport\_DTC\_Event\_Operation', is selected and highlighted with a red box. The main pane displays a table with columns: Port, Access, and Name. The 'Access' column contains mostly 'Synchronous call, timeout: 0 msec' entries. The 'Name' column lists various diagnostic monitor names. At the bottom right of the main pane, there's a 'New' button with a dropdown menu containing options like 'Receive Data (queued)...', 'Send Data (queued)...', 'Write Data (non-queued)...', and 'Invoke Operations...'. The 'Invoke Operations...' option is also highlighted with a red box. Below the table, a log window shows several entries from July 2019 at 14:53:32, detailing the import of generic attribute files.

Port	Access	Name
□ B14DA2A_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DA2A_DiagnosticMonitor_Ge...
□ B14DA2A_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DA2A_DiagnosticMonitor_Set...
□ B14D13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14D13_DiagnosticMonitor_Get...
□ B14D13_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14D13_DiagnosticMonitor_Set...
□ B22AB23_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B22AB23_DiagnosticMonitor_Get...
□ B22AB23_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B22AB23_DiagnosticMonitor_Set...
□ B140C1A_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C1A_DiagnosticMonitor_Ge...
□ B140C1A_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C1A_DiagnosticMonitor_Set...
□ B140C11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C11_DiagnosticMonitor_Ge...
□ B140C11_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C11_DiagnosticMonitor_Set...
□ B140C12_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C12_DiagnosticMonitor_Ge...
□ B140C12_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C12_DiagnosticMonitor_Set...
□ B140C13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C13_DiagnosticMonitor_Ge...
□ B140C13_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C13_DiagnosticMonitor_Set...
□ B140C92_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C92_DiagnosticMonitor_Ge...
□ B140C92_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C92_DiagnosticMonitor_Set...
□ B142A4B_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B142A4B_DiagnosticMonitor_Ge...
□ B142A4B_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B142A4B_DiagnosticMonitor_Set...
□ B143A1A_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A1A_DiagnosticMonitor_Ge...
□ B143A1A_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A1A_DiagnosticMonitor_Set...
□ B143A11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A11_DiagnosticMonitor_Ge...
□ B143A11_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A11_DiagnosticMonitor_Set...
□ B143A12_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A12_DiagnosticMonitor_Ge...
□ B143A12_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A12_DiagnosticMonitor_Set...
□ B143A13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A13_DiagnosticMonitor_Ge...
□ B143A13_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A13_DiagnosticMonitor_Set...
□ B143B28_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B28_DiagnosticMonitor_Ge...
□ B143B28_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B28_DiagnosticMonitor_Set...
□ B143B11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B11_DiagnosticMonitor_Ge...
□ B143B11_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B11_DiagnosticMonitor_Set...
□ B143B12_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B12_DiagnosticMonitor_Ge...
□ B143B12_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B12_DiagnosticMonitor_Set...
□ B143B12_DiagnosticMonitor.ReceiveData(queued)	Synchronous call, timeout: 0 msec	SC_B143B12_DiagnosticMonitor_Set...
□ B143B13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B13_DiagnosticMonitor_Ge...
□ B143B13_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B13_DiagnosticMonitor_Set...
□ B143C28_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C28_DiagnosticMonitor_Ge...
□ B143C28_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C28_DiagnosticMonitor_Set...
□ B143C11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C11_DiagnosticMonitor_Ge...

New Delete Copy

Receive Data (queued)... Send Data (queued)... Write Data (non-queued)... Invoke Operations... Send Mode Switches... Read Received Mode... Read Sent Mode... Raise External Trigger...

22 Jul 2019 14:53:32 - Importing generic attribute file: C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\au...

22 Jul 2019 14:53:32 - Importing generic attribute file: C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\au...

22 Jul 2019 14:53:32 - Importing generic attribute file: C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\au...

22 Jul 2019 14:53:32 - Importing generic attribute file: C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\au...

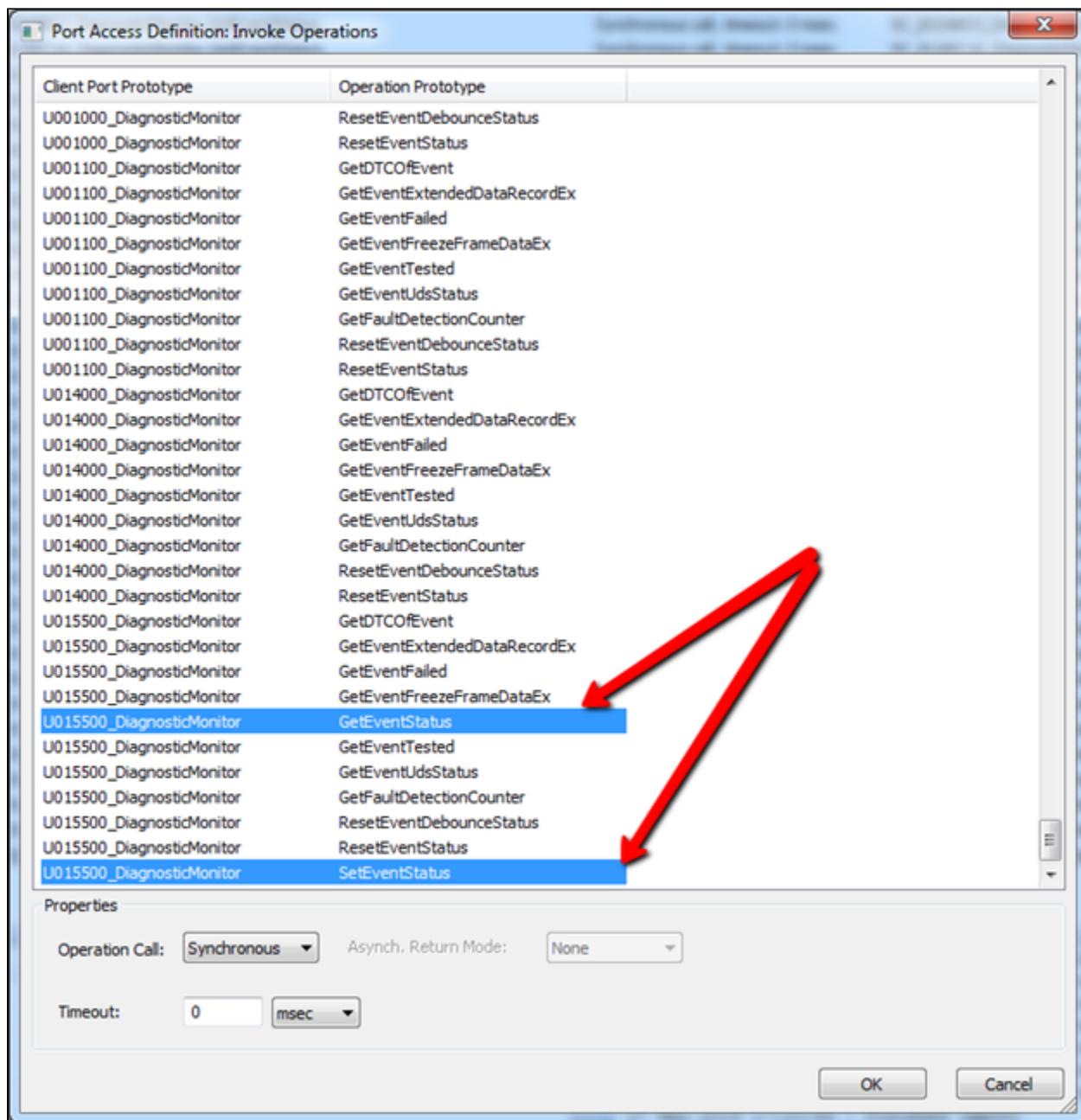
22 Jul 2019 14:53:32 - Importing generic attribute file: C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\au...

22 Jul 2019 14:53:32 - Importing generic attribute file: C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\au...

22 Jul 2019 14:53:32 - Finished import

22 Jul 2019 14:53:41 - Workspace 'C:\Eclipse\Sandbox\_R1\vipsw\ttrunk\src\autosar\Config\Developer'

Set and Get operations are required



Confirm the Port Access

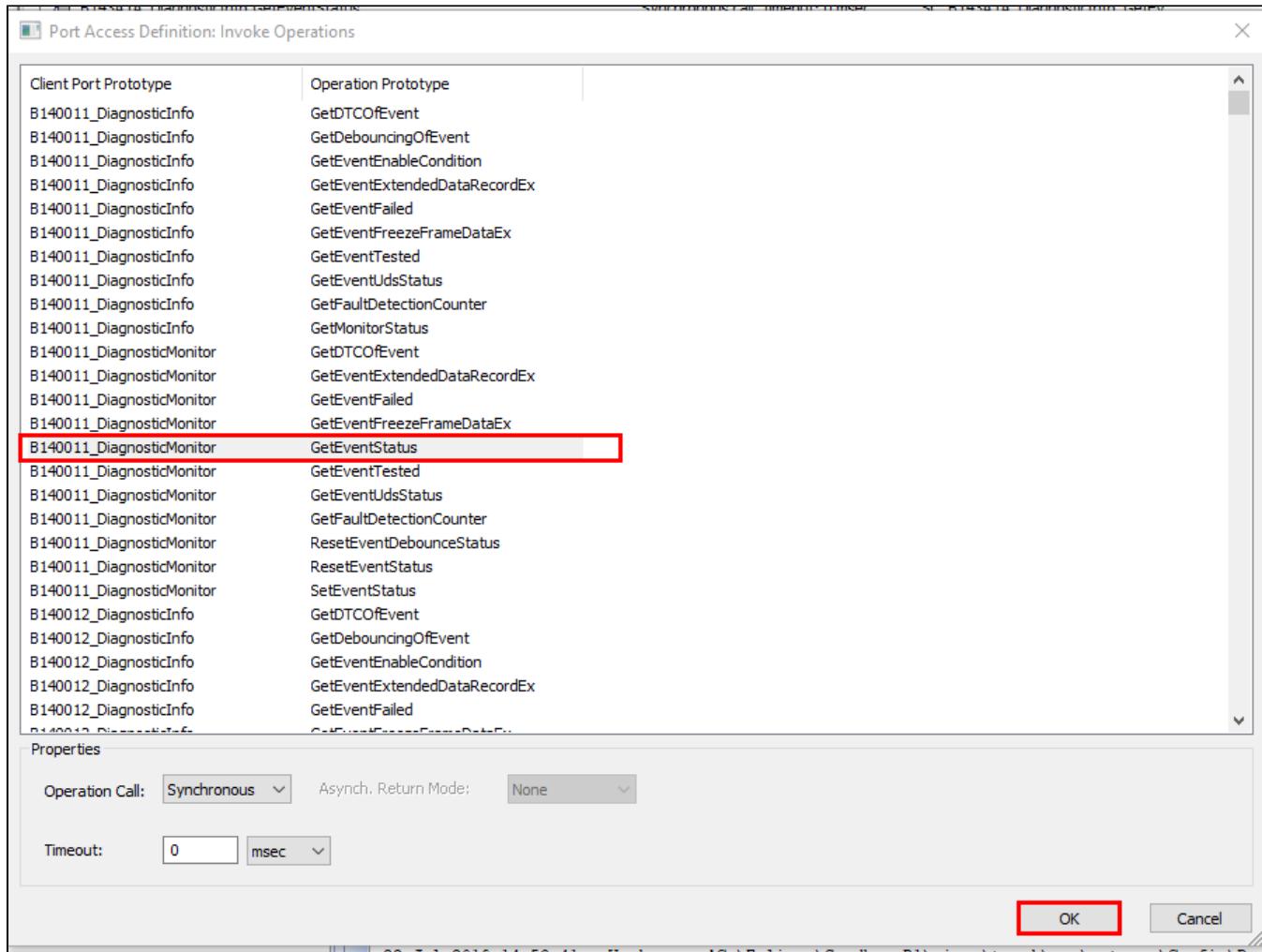
Runnable Entity	Trigger	Port Access	Properties	Attributes	Description
	Port	Access		Name	
CSDataServices_OccurrenceCounter_A...	B14DA2A_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DA2A_DiagnosticMonitor_Ge...		
CSDataServices_OccurrenceCounter_C...	B14DA2A_DiagnosticMonitor.SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DA2A_DiagnosticMonitor_Set...		
CSDataServices_OccurrenceCounter_U...	B14DB13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DB13_DiagnosticMonitor_Get...		
CtAp_CallbackOnTCStatusChange_Activ...	B14DB13_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DB13_DiagnosticMonitor_Set...		
CtAp_Check_Service_Confirmation	B22AB23_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B22AB23_DiagnosticMonitor_Get...		
CtAp_Check_Service_Indication	B22AB23_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B22AB23_DiagnosticMonitor_Set...		
CtAp_DTO_Handler_Init	B14OC1A_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC1A_DiagnosticMonitor_Ge...		
CtAp_FppProcess_Soc_Msg_Report_DTC	B14OC1A_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC1A_DiagnosticMonitor_Set...		
CtAp_PReport_DTC_Event_Operation	B14OC11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC11_DiagnosticMonitor_Ge...		
CtAp_Send_ROEMsg	B14OC11_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC11_DiagnosticMonitor_Set...		
CtAp_Set_Enable_Conditions	B14OC12_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC12_DiagnosticMonitor_Ge...		
	B14OC12_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC12_DiagnosticMonitor_Set...		
	B14OC13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC13_DiagnosticMonitor_Ge...		
	B14OC13_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC13_DiagnosticMonitor_Set...		
	B14OC92_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC92_DiagnosticMonitor_Ge...		
	B14OC92_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B14OC92_DiagnosticMonitor_Set...		
	B142A4B_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B142A4B_DiagnosticMonitor_Ge...		
	B142A4B_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B142A4B_DiagnosticMonitor_Set...		
	B143A1A_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A1A_DiagnosticMonitor_Ge...		
	B143A1A_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A1A_DiagnosticMonitor_Set...		
	B143A11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A11_DiagnosticMonitor_Ge...		
	B143A11_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A11_DiagnosticMonitor_Set...		
	B143A12_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A12_DiagnosticMonitor_Ge...		
	B143A12_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A12_DiagnosticMonitor_Set...		
	B143A13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A13_DiagnosticMonitor_Ge...		
	B143A13_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A13_DiagnosticMonitor_Set...		
	B143B2B_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B2B_DiagnosticMonitor_Ge...		
	B143B2B_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B2B_DiagnosticMonitor_Set...		
	B143B11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B11_DiagnosticMonitor_Ge...		
	B143B11_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B11_DiagnosticMonitor_Set...		
	B143B12_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B12_DiagnosticMonitor_Ge...		
	B143B12_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B12_DiagnosticMonitor_Set...		
	B143B13_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B13_DiagnosticMonitor_Ge...		
	B143B13_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B13_DiagnosticMonitor_Set...		
	B143C11_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C11_DiagnosticMonitor_Ge...		
	B143C2B_DiagnosticMonitor.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C2B_DiagnosticMonitor_Ge...		
	B143C2B_DiagnosticMonitor_SetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C2B_DiagnosticMonitor_Set...		

Select the Runnable CtAp\_PpReport\_DTC\_Event\_Operation runnable to configure the proper access ports

ECU_Composition	CpCFC4_R1_10	Runnable Entity	Trigger	Port Access	Properties	Attributes	Description
		CsDataservices_OccurrenceCounter_A...					
		CsDataservices_OccurrenceCounter_C...					
		CsDataservices_OccurrenceCounter_C...					
		CsDataservices_OccurrenceCounter_F...					
		CTAp_CallbadOTSCStatusChange_Activ...					
		CTAp_Check_Service_Confirmation					
		CTAp_Service_Indication					
		CTAp_Discret					
		CTAp_EQLDat					
		CTAp_Factory					
		CTAp_Media					
		CTAp_QORC_C					
		CTAp_Project					
		CTAp_RealTin					
		CTAp_RearVie					
		CTAp_SyncCli					
		CTAp_TBMMH					
		CTAp_NvMh					
		CTAp_Dbdackl					
		CTAp_Dbdatter					
		CTAp_DbdgTr					
		CTAp_Dcds3ip					
		CTAp_Dcdtuner					
		CTAp_Camplifi					
		CTAp_DataTo					
		CTAp_ColoHwAI					
		CTAp_CnvNva					
		CTAp_CpoPower					
		CTAp_CpoTherm					
		CTAp_Co_Vehic					
		CTAp_HwAb_F					
		CTAp_NvMdata					
		CTAp_ANCMa					
		CTAp_PSAnter					
		CTAp_System					
		CTAp_DTC_H					
		CTAp_Generi					
		CTCdSystem					
		IoHwAb_ELW					
				Port	Access	Name	
					Synchronous call, timeout: 0 msec	SC_B14D2A_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14B013_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B22AB23_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B140C1A_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B140C11_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B140C12_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B140C13_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B140C92_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B142A4B_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B143A1A_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B143A11_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B143A12_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B143A13_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14B02B_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14B811_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14B812_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14B813_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14C2B_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14C311_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14C312_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14C313_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14D1A_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14D111_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14D12_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14D13_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E02B_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E011_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E012_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E013_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E021_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E022_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14E023_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14F111_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14F112_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B14F113_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B156B1A_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B156B113_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B157A1A_DiagnosticInfo_GetEv...	
					Synchronous call, timeout: 0 msec	SC_B157A113_DiagnosticInfo_GetEv...	

Invoke the operation

Get operations are required



### Confirm the Port Access

Runnable Entity	Trigger	Port Access	Properties	Attributes	Description
CSDataServices_OccurrenceCounter_A...					
CSDataServices_OccurrenceCounter_C...					
CSDataServices_OccurrenceCounter_C...					
CSDataServices_OccurrenceCounter_Fr...					
CTAp_CalibAddDTCSstatusChange_Activ...					
CTAp_Check_Service_Confirmation					
CTAp_Check_Service_Indication					
CTAp_DTC_Handler_Inv					
CTAp_Monitor_Internal_DTC					
CTAp_PpProcess_SoC_Msg_Report_DTC					
CTAp_PpReport_DTC_Event_Operation					
<b>CTAp_Send_R OEMsg</b>					
CTAp_Set_Enable_Conditions					
		Port	Access	Name	
		<input checked="" type="checkbox"/> B14DB13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B14DB13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B22AB23_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B22AB23_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B140C1A_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C1A_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B140C11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B140C12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B140C13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B140C92_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B140C92_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B142A4B_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B142A4B_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143A1A_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A1A_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143A11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143A12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143A13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143A13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143B2_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B2_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143B11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143B12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143B13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143B13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143C2B_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C2B_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143C11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143C12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143C13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143C13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143D1A_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143D1A_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143D11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143D11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143D12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143D12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143D13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143D13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143E2B_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143E2B_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143E11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143E11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143E12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143E12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143E13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143E13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143F2B_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143F2B_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143F11_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143F11_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143F12_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143F12_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B143F13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B143F13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B156B1A_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B156B1A_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B156B13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B156B13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B157A1A_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B157A1A_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B157A13_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B157A13_DiagnosticInfo_GetEv...	
		<input checked="" type="checkbox"/> B210A00_DiagnosticInfo.GetEventStatus	Synchronous call, timeout: 0 msec	SC_B210A00_DiagnosticInfo_GetEv...	

New Delete Copy New Edit... Delete

## Service Port for Enable Conditions

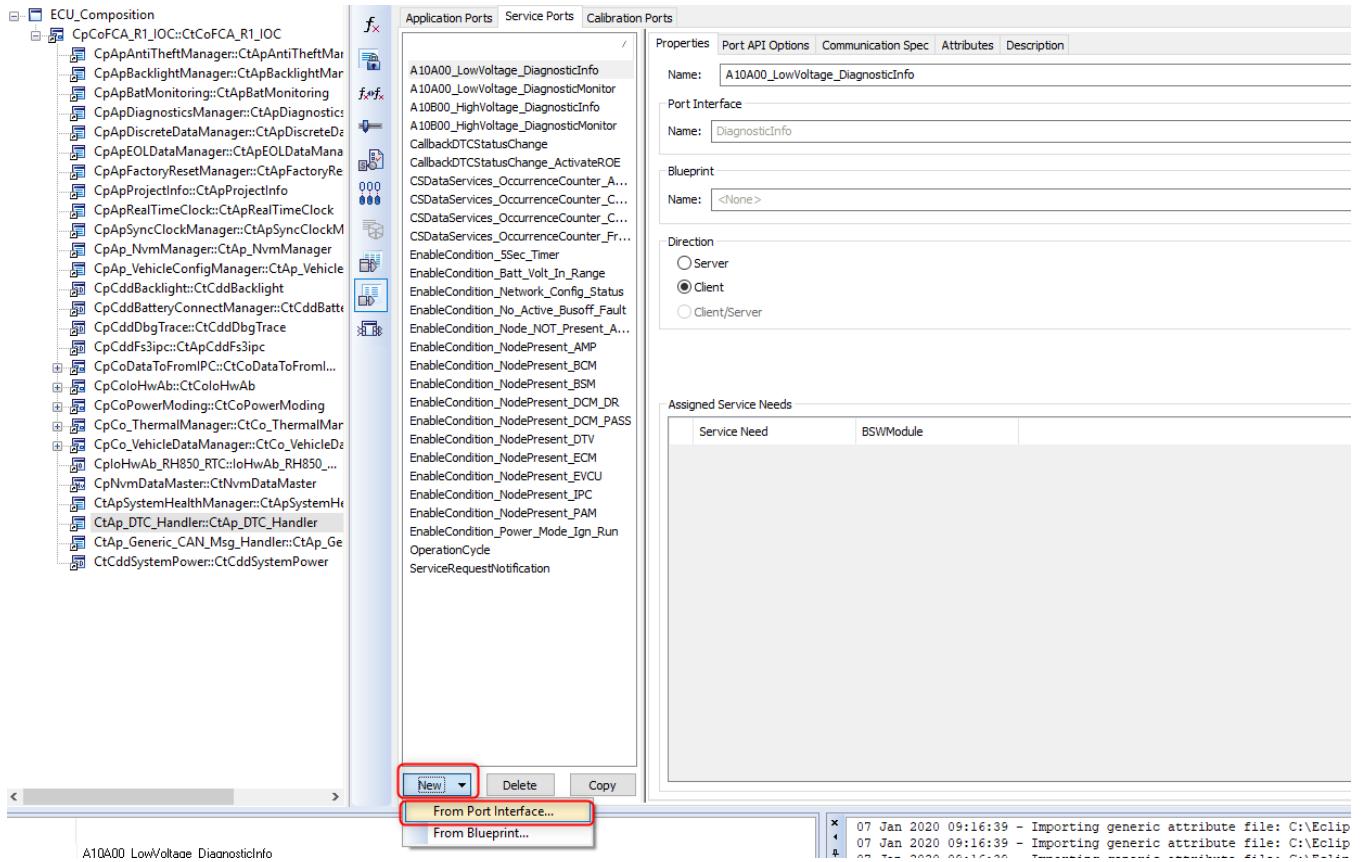
As the previous Step create the Service Ports on the DTC\_Handler for the enabling and disabling of the Enable Conditions

Select the CtAp\_DTC\_Handler, later select the Service Port Tab

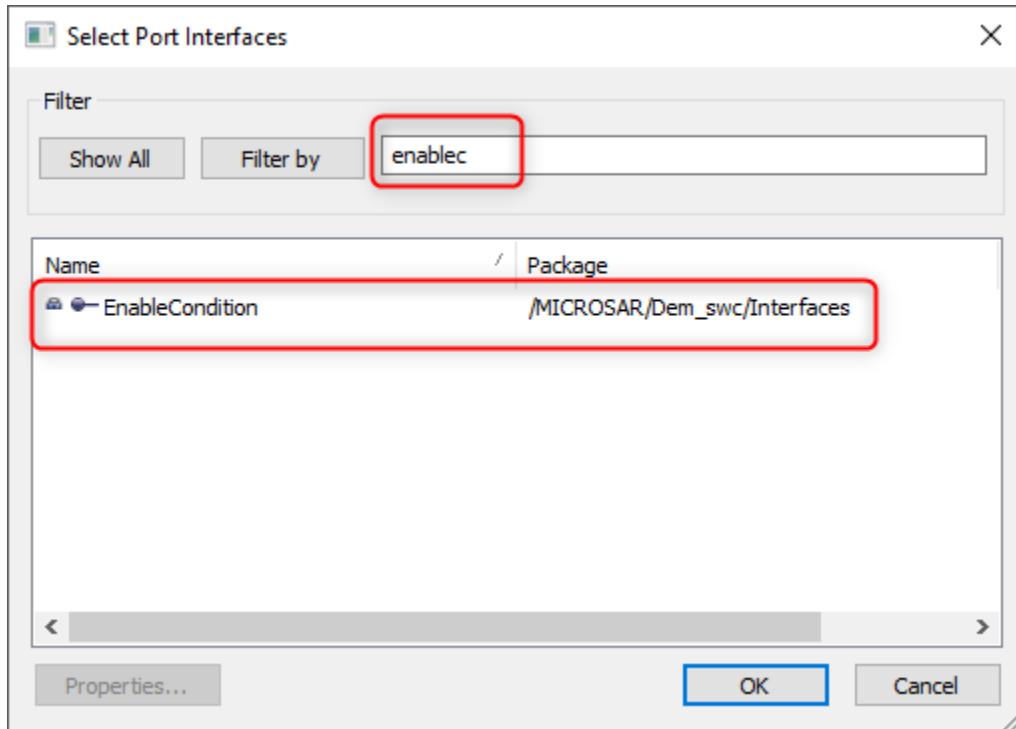
The screenshot shows the ECU Composition interface with the Service Ports tab selected. A new service port named 'A10A00\_LowVoltage\_DiagnosticInfo' is being configured. The 'Client' radio button is selected under the 'Direction' section. The 'Assigned Service Needs' table is currently empty.

Service Need	BSWModule

Create Service Port from Port Interface



Filter the EnableCondition



Change the Name of the Service port, normally the EnableCondition is refred

Application Ports	Service Ports	Calibration Ports																																																					
<ul style="list-style-type: none"> <li>A10A00_LowVoltage_DiagnosticInfo</li> <li>A10A00_LowVoltage_DiagnosticMonitor</li> <li>A10B00_HighVoltage_DiagnosticInfo</li> <li>A10B00_HighVoltage_DiagnosticMonitor</li> <li>CallbackDTCSstatusChange</li> <li>CallbackDTCSstatus_Change_ActivateROE</li> <li>CSDataServices_OccurrenceCounter_A...</li> <li>CSDataServices_OccurrenceCounter_C...</li> <li>CSDataServices_OccurrenceCounter_C...</li> <li>CSDataServices_OccurrenceCounter_F...</li> <li>EnableCondition_5Sec_Timer</li> <li><b>EnableCondition_Batt_Volt_In_Range</b></li> <li>EnableCondition_Network_Config_Status</li> <li>EnableCondition_No_Active_Busoff_Fault</li> <li>EnableCondition_Node_NOT_Present_A...</li> <li>EnableCondition_NodePresent_AMP</li> <li>EnableCondition_NodePresent_BCM</li> <li>EnableCondition_NodePresent_BSM</li> <li>EnableCondition_NodePresent_DCM_DR</li> <li>EnableCondition_NodePresent_DCM_PASS</li> <li>EnableCondition_NodePresent_DTV</li> <li>EnableCondition_NodePresent_ECM</li> <li>EnableCondition_NodePresent_EVCU</li> <li>EnableCondition_NodePresent_IPC</li> <li>EnableCondition_NodePresent_PAM</li> <li>EnableCondition_Power_Mode_Ign_Run</li> <li>OperationCycle</li> <li>ServiceRequestNotification</li> </ul>	<table border="1"> <thead> <tr> <th>Properties</th> <th>Port API Options</th> <th>Communication Spec</th> <th>Attributes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Name: <b>EnableCondition_Batt_Volt_In_Range</b></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="5">Port Interface</td> </tr> <tr> <td>Name: <b>EnableCondition</b></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="5">Blueprint</td> </tr> <tr> <td>Name: &lt;None&gt;</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="5">Direction</td> </tr> <tr> <td> <input type="radio"/> Server  <input checked="" type="radio"/> Client  <input type="radio"/> Client/Server         </td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="5">Assigned Service Needs</td> </tr> <tr> <td colspan="5"> <table border="1"> <thead> <tr> <th>Service Need</th> <th>BSWModule</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> </td> </tr> </tbody> </table>	Properties	Port API Options	Communication Spec	Attributes	Description	Name: <b>EnableCondition_Batt_Volt_In_Range</b>					Port Interface					Name: <b>EnableCondition</b>					Blueprint					Name: <None>					Direction					<input type="radio"/> Server <input checked="" type="radio"/> Client <input type="radio"/> Client/Server					Assigned Service Needs					<table border="1"> <thead> <tr> <th>Service Need</th> <th>BSWModule</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>					Service Need	BSWModule		
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<input type="button" value="New"/> <input type="button" value="Delete"/> <input type="button" value="Copy"/>																																																							

## Add needed Port Access in SWC Runnables for the Enable Conditions

Select the Runnable CtAp\_PpReport\_DTC\_Event\_Operation runnable to configure the proper access ports.

ECU_Composition		Runnable Entity	Trigger	Port Access	Properties	Attributes	Description
CpCpFCA_R1_JOC:CtCpFCA_R1_JOC		CSDataServices_OccurrenceCounter_A...					
CpApAntiTheftManager:CtApAntiTheftM...		CSDataServices_OccurrenceCounter_C...					
CpApBackLightManager:CtApBacklightM...		CSDataServices_OccurrenceCounter_C...					
CpApBatteryMonitoring:CtApBatteryMon...		CSDataServices_OccurrenceCounter_F...					
CpApDiagnosticsManager:CtApDiagnostic...		CtAp_CallbackTCDSStatusChange_Actv...					
CpApDiscreteDataManager:CtApDiscreteD...		CtAp_Check_Confirmation					
CpApEOLDataManager:CtApEOLDataMana...		CtAp_Check_Service_Indication					
CpApFactoryResetManager:CtApFactoryRe...		CtAp_DTC_Handler_Inv					
CpApProjectInfo:CtApProjectInfo		CtAp_Monitor_Internal_DTC					
CpApRealTimeClock:CtApRealTimeClock		CtAp_PpProcess_Soc_Bsm_Report_DTC					
CpApSyncClockManager:CtApSyncClockM...		CtAp_PpReport_DTC_Event_Operation					
CpAp_NvMmManager:CtAp_NvMmManager		CtAp_Send_ROMMsg					
CpAp_VehicleConfigManager:CtAp_Vehicle...		CtAp_Set_Enable_Conditions					
CpCddBacklight:CtCddBacklight		RCTApLoC_AMP					
CpCddBatteryConnectManager:CtCddBatt...							
CpCddDbgTrace:CtCddDbgTrace							
CpCddFsJpc:CtApCddFsJpc							
CpCoDataToFromPcm:CtCoDataToFromL...							
CpColorHwAb:CtColorHwAb							
CpCoPowerModing:CtCoPowerModing							
CpCo_ThermalManager:CtCo_ThermalMar...							
CpCo_VehicleDataManager:CtCo_VehicleD...							
CpIoHwAb_RH850_RTCIoHwAb_RH850_...							
CpNvMmDataMaster:CtNvMmDataMaster							
CtApSystemHealthManager:CtApSystemHe...							
CtAp_DTC_Handler:CtAp_DTC_Handler							
CtAp_Generic_CAN_Msg_Handler:CtAp_Ge...							
CtCddSystemPower:CtCddSystemPower							

Invoke the operation

The screenshot shows a UML-like interface for defining port access and operations. On the left, there's a tree view of ECU components and their sub-components. In the center, a 'Runnable Entity' section lists various entities like 'CDataServices\_OccurrenceCounter\_A...' and 'CDataServices\_OccurrenceCounter\_C...'. To the right, a 'Trigger Port Access Properties Attributes Description' table defines port access conditions. A context menu is open over the table, with the 'Invoke Operations...' option highlighted.

Port	Access	Name
> EnableCondition_Batt_Volt_In_Range_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_Batt_Volt_In_R...
> EnableCondition_Network_Config_Status_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_Network_Conf...
> EnableCondition_Node_Active_Busoff_Fault_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_Node_Active_B...
> EnableCondition_Node_Not_Present_AMP_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_Node_NOT_Pre...
> EnableCondition_NodePresent_AMP_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_...
> EnableCondition_NodePresent_BCM_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_B...
> EnableCondition_NodePresent_DOM_DR_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_...
> EnableCondition_NodePresent_DOM_PASS_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_...
> EnableCondition_NodePresent_DTC_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_...
> EnableCondition_NodePresent_ECU_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_E...
> EnableCondition_NodePresent_ECU_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_E...
> EnableCondition_NodePresent_JPC_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_J...
> EnableCondition_NodePresent_PNP_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_P...
> EnableCondition_Power_Mode_Ign_Run_SetEnableCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_Power_Mode_I...
> OperationCycle_SetOperationCycleState	Synchronous call, timeout: 0 msec	SC_Operationcycle_SetOperationC...
> PnPNetCfgD_BSP_PN_BH_SetEnableCondition	Synchronous call, timeout: 0 msec	REC_PnPNetCfgD_BSP_PN_BH_SetEn...
> PnPNetCfgD_DOM_DR_PN_BH_SetEnableCondition	Synchronous call, timeout: 0 msec	REC_PnPNetCfgD_DOM_DR_PN_BH_Set...
> PnPNetCfgD_DOM_PASS_PN_BH_SetEnableCondition	Synchronous call, timeout: 0 msec	REC_PnPNetCfgD_DOM_PASS_PN_BH_S...
> PnPNetCfgD_RL_PN_BH_SetEnableCondition	Synchronous call, timeout: 0 msec	REC_PnPNetCfgD_RL_PN_BH_SetEnab...
> PnPNetCfgJCS_I_PN_BH_SetEnableCondition	Synchronous call, timeout: 0 msec	REC_PnPNetCfgJCS_I_PN_BH_SetEnab...
> PnPNetCfgJmpI_Sg_DeNetCfgAmp	Synchronous call, timeout: 0 msec	REC_PnPNetCfgJmpI_Sg_DeNetCfgA...
> PnPNetFGSStatInt_Sg_DeNetCfgStatInt	Synchronous call, timeout: 0 msec	REC_PnPNetFGSStatInt_Sg_DeNetCF...
> PnPVMReadAllFinished_ReadAllFinishedStatus	Synchronous call, timeout: 0 msec	REC_PnPVMReadAllFinished_ReadAll...
> PpProxyProgrammed_ProxValidated	Synchronous call, timeout: 0 msec	REC_PpProxyProgrammed_ProxValid...
> PpVehConfigReadyFlag_NET_VehConReadyFlag	Synchronous call, timeout: 0 msec	REC_PpVehConfigReadyFlag_NET_Ve...
> PvVoltageStatus_DeVoltageStatus	Synchronous call, timeout: 0 msec	REC_PvVoltageStatus_DeVoltageSt...

SetEnableConditions are required

The screenshot shows a detailed view of a port access definition for 'Invoke Operations...'. It lists client port prototypes and operation prototypes, along with their descriptions. A specific entry for 'EnableCondition\_5Sec\_Timer' is highlighted.

Client Port Prototype	Operation Prototype
A10B00_HighVoltage_DiagnosticInfo	GetEventUdsStatus
A10B00_HighVoltage_DiagnosticInfo	GetFaultDetectionCounter
A10B00_HighVoltage_DiagnosticInfo	GetMonitorStatus
A10B00_HighVoltage_DiagnosticMonitor	GetDTCOfEvent
A10B00_HighVoltage_DiagnosticMonitor	GetEventExtendedDataRecordEx
A10B00_HighVoltage_DiagnosticMonitor	GetEventFailed
A10B00_HighVoltage_DiagnosticMonitor	GetEventFreezeFrameDataEx
A10B00_HighVoltage_DiagnosticMonitor	GetEventStatus
A10B00_HighVoltage_DiagnosticMonitor	GetEventTested
A10B00_HighVoltage_DiagnosticMonitor	GetEventUdsStatus
A10B00_HighVoltage_DiagnosticMonitor	GetFaultDetectionCounter
A10B00_HighVoltage_DiagnosticMonitor	ResetEventDebounceStatus
A10B00_HighVoltage_DiagnosticMonitor	ResetEventStatus
A10B00_HighVoltage_DiagnosticMonitor	SetEventStatus
CallbackDTCStatusChange	DTCstatusChanged
EnableCondition_5Sec_Timer	SetEnableCondition
OperationalCycle	GetOperationalcyclesstate
PpADC_Operation	Read_ADC_Value
PpDiagOperations	Disable_hard_keys
PpDiagOperations	Ecu_Life_time_nvmin
PpDiagOperations	Ecu_Lifetime_since_pwr_on
PpDiagOperations	Ecu_time_since_ign_on_secs
PpDiagOperations	ExecuteFS
PpDiagOperations	VerifyFSStatus
PpReport_DTC_Event_Client	GetDTCSetStatus
PpReport_DTC_Event_Client	SetDTC

Properties section:

- Operation Call: Synchronous
- Asynch. Return Mode: None
- Timeout: 0 msec

Buttons at the bottom: OK (highlighted), Cancel

## Confirm the Port Access

The screenshot shows the Port Access configuration window. On the left, there is a tree view of ECU Composition components. In the center, a table lists various ports with their properties. One specific port, "CnAp\_Set\_Enable\_Conditions", is highlighted with a red box.

Port	Access	Name
CnAp_Set_Enable_Conditions	Synchronous call, timeout: 0 msec	SC_EnableCondition_SSec_Timer_Set...
EnableCondition_Batt_Volt_In_Range	Synchronous call, timeout: 0 msec	SC_EnableCondition_Batt_Volt_In_R...
EnableCondition_Network_Config_Status	Synchronous call, timeout: 0 msec	SC_EnableCondition_Network_Confi...
EnableCondition_No_Active_Busoff_Fault	Synchronous call, timeout: 0 msec	SC_EnableCondition_No_Active_Bus...
EnableCondition_Node_NOT_Present_AMP	Synchronous call, timeout: 0 msec	SC_EnableCondition_Node_NOT_Pre...
EnableCondition_NodePresent_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_...
EnableCondition_NodePresent_DOM_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_D...
EnableCondition_NodePresent_DOM_PASS_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_L...
EnableCondition_NodePresent_ECM_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_E...
EnableCondition_NodePresent_EOM_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_E...
EnableCondition_NodePresent_IPC_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_I...
EnableCondition_NodePresent_PAM_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_NodePresent_P...
EnableCondition_Power_Mode_1on_Run_SetEndCondition	Synchronous call, timeout: 0 msec	SC_EnableCondition_Power_Mode_1...
OperationCycle_SetOperationCycleState	Synchronous call, timeout: 0 msec	SC_OperationCycle_SetOperationCy...
PpCANArchID_ArchID	Read (explicit by value)	REC_PpCANArchID_ArchID
PpCANRxSig_NET_CFG_STAT_PT_PN_BH_DeNet_CFG_STAT_PT_PN_BH	Read (explicit by value)	REC_PpCANRxSig_NET_CFG_STAT_...
PpDbPrint_DbPrint	Synchronous call, timeout: 0 msec	SC_PpDbPrint_DbPrint
PpDbPrint_OppDbPrint	Synchronous call, timeout: 0 msec	SC_PpDbPrint_OppDbPrint_1
PpGetProxyParameter_Operation	Synchronous call, timeout: 0 msec	SC_PpGetProxyParameter_Operation
PpGetVehicleConfigParam_GetParam_PNET	Synchronous call, timeout: 0 msec	SC_PpGetVehicleConfigParam_Ge...
PpIgnitionStatus_DeignitionStatus	Read (explicit by value)	REC_PpIgnitionStatus_DeignitionSt...
PpNetCg_BSM_PN_BH_DeletCg_BSM_PN_BH	Read (explicit by value)	REC_PpNetCg_BSM_PN_BH_Delet...
PpNetCg_DOM_DR_PN_BH_DeletCg_DOM_DR_PN_BH	Read (explicit by value)	REC_PpNetCg_DOM_DR_PN_BH_D...
PpNetCg_DOM_PASS_PN_BH_DeletCg_DOM_PASS_PN_BH	Read (explicit by value)	REC_PpNetCg_DOM_PASS_PN_BH_D...
PpNetCg_ICC_J_PN_BH_DeletCg_ICC_J_PN_BH	Read (explicit by value)	REC_PpNetCg_ICC_J_PN_BH_Dele...
PpNetCg_IIS_PN_BH_DeletCg_IIS_PN_BH	Read (explicit by value)	REC_PpNetCg_IIS_PN_BH_Delet...
PpNetCg_Ampl_Sg_DeletCgAmpSg	Read (explicit by value)	REC_PpNetCgAmpSg_DeletCgAmpSg
PpNetCgStatInit_Sg_DeletCgStatInit	Read (explicit by value)	REC_PpNetCgStatInit_Sg_DeletC...
PpNetReadIfFinished_ReadAllFinishedStatus	Read (explicit by value)	REC_PpNetReadIfFinished_ReadAl...
PpProxyProgrammed_ProxValid	Read (explicit by value)	REC_PpProxyProgrammed_ProxVali...
PpVehConfigReadyFlag_PNET_VehConfigReadyFlag	Read (explicit by value)	REC_PpVehConfigReadyFlag_PNET_...
PpVoltageStatus_DeVoltageStatus	Read (explicit by argument)	REC_PpVoltageStatus_DeVoltageSt...

## Map Service Port with the DTC Events

To map the Created Service Ports in the AUTOSAR CFG:

Runtime System ECU Software Components Service Componenets DemSatelite\_0 Service Ports

The screenshot shows the ECU Software Components configuration window. On the left, there is a tree view of ECU Composition components. In the center, a table lists connected components and their mappings. A specific entry, "Event\_DTC\_0x956013", is highlighted with a red box.

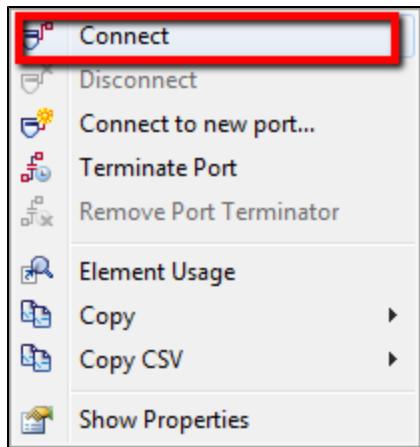
Connected Components
CpApPowerModing
CpApRealTimeClock
CpApSigHandler
CpApViewCamera
CpApClusterRepetition
CpApT8MHALRepetition
CpApInmemManager
CpApThermalManager
CpCdHilInterfaceManager
CpApBattMonitoring
CpApAnThermManager
CIAp_Generic_CAN_Msg_Handler
CIAp_BacklightManager
CIApCANMsg_Custom_Handler
CIAp_DTC_Handler
CIApSAinternahandler
CIApMediaHALRepetition
CIAp_PROXY_Handler
CIApDiagnisticsManager
CIApORC

Look for the DTC Event previously created

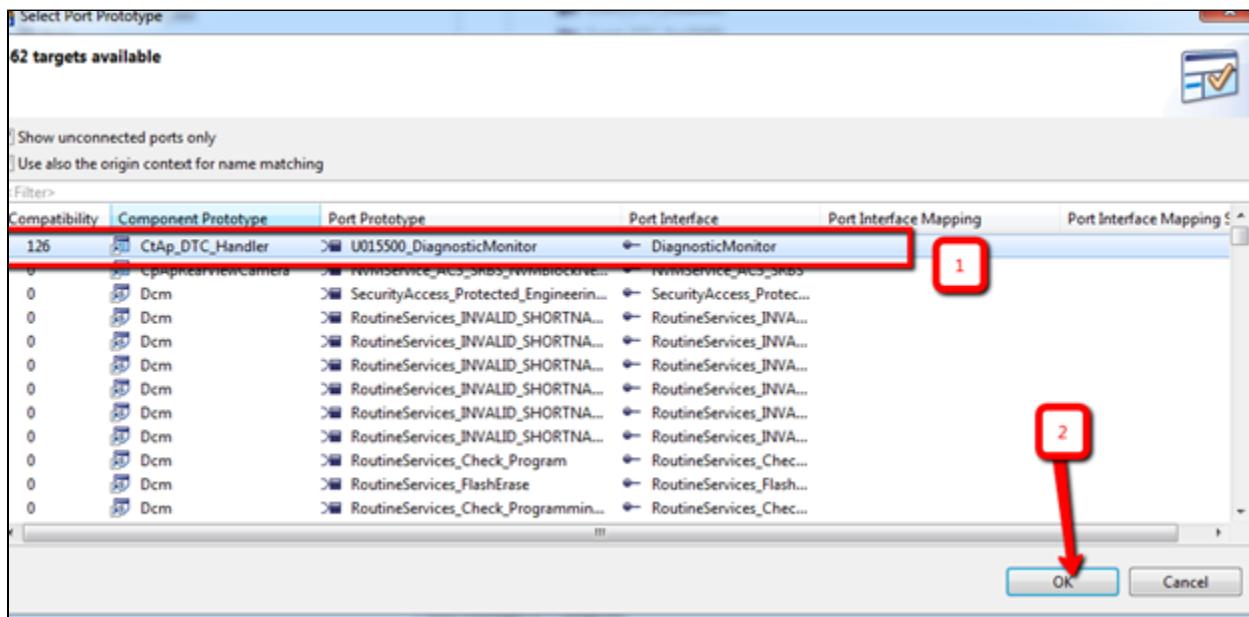
The screenshot shows the Service Ports configuration window. On the left, there is a tree view of ECU Composition components. In the center, a table lists service ports. A new entry, "Event\_DTC\_0x956013", is highlighted with a red box.

Name	Port Interface	Type	Connected components:
Event_DTC_0x956013	DiagnosticMonitor	Service	
EvtInfo_INT_CLK_FAILURE_003			
EvtInfo_INT_CLK_FAILURE_004			
EvtInfo_INT_CLK_FAILURE_005			
EvtInfo_INT_CLK_FAILURE_001			
EvtInfo_PortDEM			
EvtInfo_FLS DEM_001			
EvtInfo_DIO_REG_WRITE_VERIFY			
EvtInfo_FLS DEM_002			
EvtInfo_FLS DEM_003			
EvtInfo_FLS DEM_004			
EvtInfo_FLS DEM_005			
EvtInfo_FLS DEM_006			
EvtInfo_FLS DEM_007			
EvtInfo_SP DEM1			
EvtInfo_SPI DEM1			
EvtInfo_SPI DEM2			
EvtInfo_DTC_0x956013			
Event_DTC_0x956011			
EvtInfo_DTC_0x0c01100			
Event_DTC_0xc01100			
EvtInfo_DTC_0x948800			
Event_DTC_0x948800			
EvtInfo_DTC_0x957913			
Event_DTC_0x957913			
EvtInfo_DTC_0x9400009			

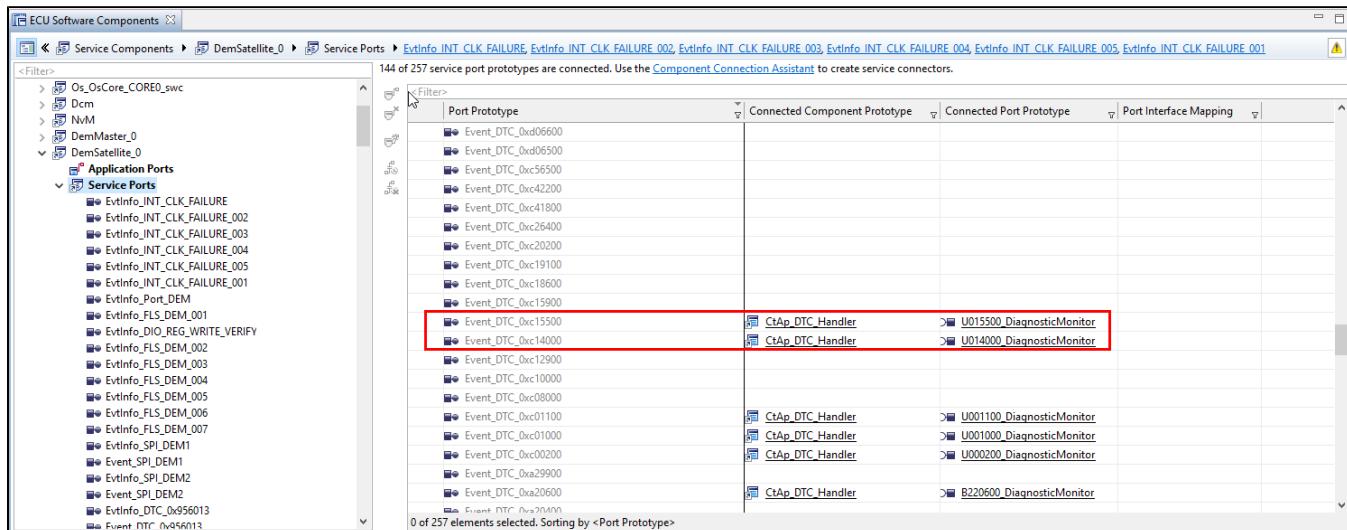
Right Click on your required DTC and Select Connect



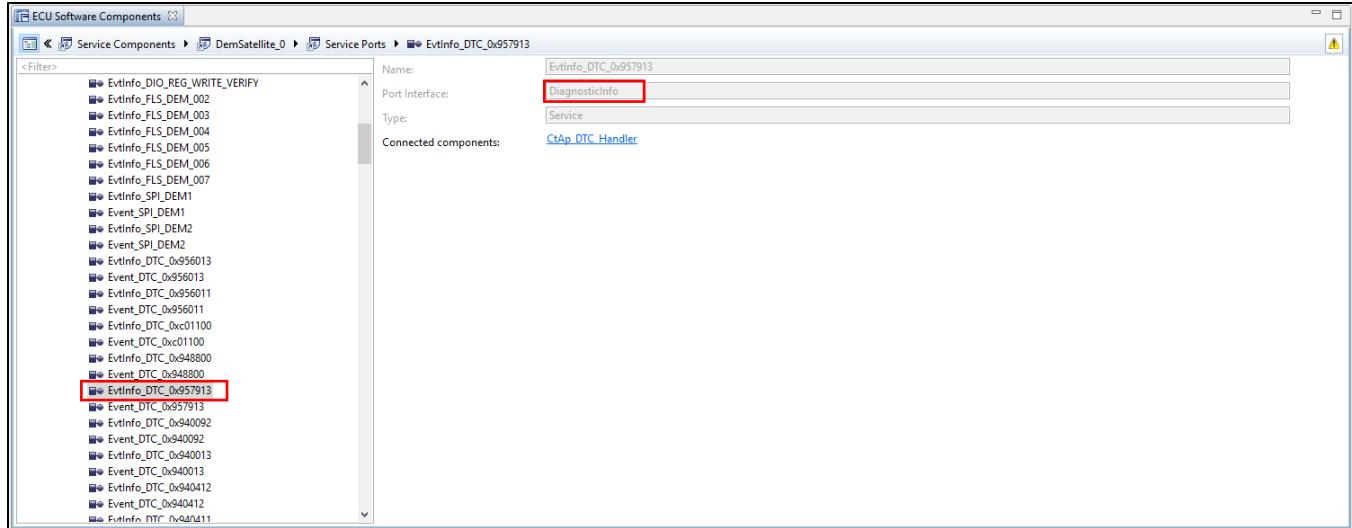
Select Diagnostic Monitor



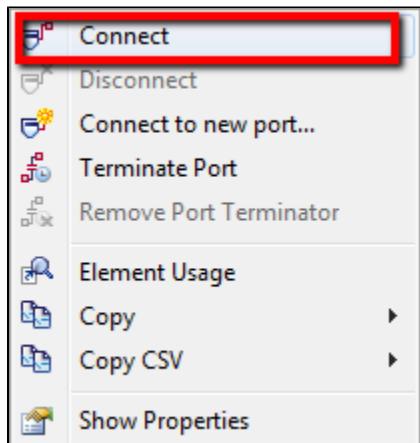
Verify the Mapping



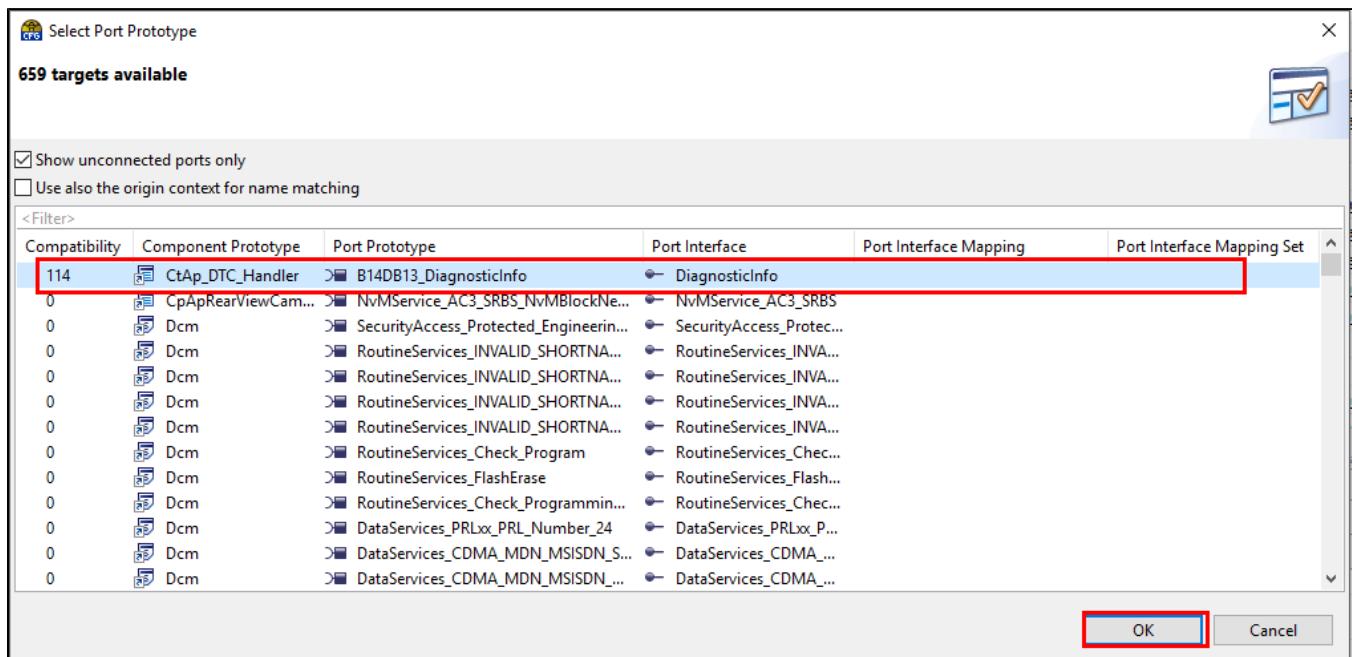
## Same for the EventInfo of the DTC



Right Click on your required DTC and Select Connect



Select Diagnostic Info



## Verify the Mapping

The screenshot shows the ECU Software Components interface. On the left, a tree view lists components like Os\_OsCore\_CORE0\_swc, Dcm, NvM, DemMaster\_0, and DemSatellite\_0. Under DemMaster\_0, Application Ports and Service Ports are expanded. The Service Ports section contains numerous entries such as Evtnfo\_INT\_CLK\_FAILURE, Evtnfo\_DTC, and Event\_DTC. On the right, a table titled '144 of 257 service port prototypes are connected' displays the mapping between Port Prototypes (e.g., Evtnfo\_DTC\_0x943a13) and Connected Component Prototypes (e.g., CtAp\_DTC\_Handler). A red box highlights two specific rows: one for Evtnfo\_DTC\_0x94db13 (Connected Component Prototype: CtAp\_DTC\_Handler, Connected Port Prototype: B14DB13\_DiagnosticInfo) and another for Evtnfo\_DTC\_0x94da2a (Connected Component Prototype: CtAp\_DTC\_Handler, Connected Port Prototype: B14DA2A\_DiagnosticInfo).

## Map Enable Conditions Service Port with the SWC Ports.

To map the Self Generated Service Ports in the AUTOSAR CFG:

Runtime System ECU Software Components Service Componenets DemMaster\_0 Service Ports

This screenshot shows the ECU Software Components interface with a different focus. The tree view on the left highlights the 'Service Components' node under DemMaster\_0. The table on the right lists 27 of 36 service port prototypes connected. It includes entries like DemServices, GeneralEvtnfo, OpCycle\_IgnitionCycle, and CbReadData. A red box highlights the 'OpCycle\_IgnitionCycle' row, which is connected to the 'CtAp\_DTC\_Handler' component and the 'OperationCycle' port prototype.

Then Filter for the EnableConditions

OS Configuration Basic Editor Runtime System General ECU Software Components

<Filter>

Service Components > DemMaster\_0 > Service Ports > DemServices, GeneralEvtInfo, OpCycle\_IgnitionCycle, OpCycle\_PowerCycle, ClearDTC\_DemClient, OverflowIndPrimaryMemory\_DemClient, IndStatus\_WarningIndicator, CBReadData DID\_0x1921\_Bitfield

ECU Composition

- Application Ports
- Service Mappings
- Data Mapping
- Application Components
- Service Components
- BswM
- ComM
- Dt
- EcuM
- Os\_OsCore\_CORE0\_swc
- Dcm
- NvM
- DemMaster\_0

  - Application Ports
  - Service Ports
  - DemServices
  - GeneralEvtInfo
  - OpCycle\_IgnitionCycle
  - OpCycle\_PowerCycle
  - ClearDTC\_DemClient
  - OverflowIndPrimaryMemory\_DemClient
  - IndStatus\_WarningIndicator
  - CBReadData DID\_0x1921\_Bitfield
  - CBReadData DID\_0x1009\_ECU\_Time\_Since\_Ignition\_ON\_24
  - CBReadData DID\_0x2001\_Odometer\_24
  - CBReadData OccurrenceCounter\_Aging\_Counter\_ID
  - CBReadData OccurrenceCounter\_Frequency\_Counter\_ID
  - CBReadData DID\_0x1008\_ECU\_Life\_Time\_24
  - CBReadData DID\_0x1004\_Battery\_Voltage\_24
  - CBReadData DID\_0x200a\_Ignition\_ON\_Counter\_24
  - CBReadData\_OccurrenceCounter\_Cycles\_to\_Switch\_off\_the\_Wan
  - CBReadData\_OccurrenceCounter\_Cycle\_to\_switch\_WL\_off\_ID
  - FiatHknnf DTC RATT VOLTAGE IN RANGE

27 of 36 service port prototypes are connected. Use the Component Connection Assistant to create service connectors.

Port Prototype	Connected Component Prototype	Connected Port Prototype
EnableCond_DTC_BATT_VOLTAGE_IN_RANGE	CtAp_DTC_Handler	EnableCondition_Batt_Volt_In_Range
EnableCond_DTC_NETWORK_CONFIG_STATUS	CtAp_DTC_Handler	EnableCondition_Network_Config_Status
EnableCond_DTC_POWER_MODE_IGN_RUN	CtAp_DTC_Handler	EnableCondition_Power_Mode_Ign_Run
EnableCond_DTC_ENABLE_CONDITION_5Sec_TIMER	CtAp_DTC_Handler	EnableCondition_EnableCondition_5Sec_Timer
EnableCond_DTC_NO_ACTIVE_BUSSOFF_FAULT	CtAp_DTC_Handler	EnableCondition_No_Active_Busoff_Fault
EnableCond_DTC_NODE_PRESENT_AMP	CtAp_DTC_Handler	EnableCondition_NodePresent_AMP
EnableCond_DTC_NODE_PRESENT_BCM	CtAp_DTC_Handler	EnableCondition_NodePresent_BCM
EnableCond_DTC_NODE_PRESENT_BSM	CtAp_DTC_Handler	EnableCondition_NodePresent_BSM
EnableCond_DTC_NODE_PRESENT_DTV	CtAp_DTC_Handler	EnableCondition_NodePresent_DTV
EnableCond_DTC_NODE_PRESENT_ECM	CtAp_DTC_Handler	EnableCondition_NodePresent_ECM
EnableCond_DTC_NODE_PRESENT_IPC	CtAp_DTC_Handler	EnableCondition_NodePresent_IPC
EnableCond_DTC_NODE_PRESENT_PAM	CtAp_DTC_Handler	EnableCondition_NodePresent_PAM
EnableCond_DTC_NODE_PRESENT_DCM_DR	CtAp_DTC_Handler	EnableCondition_NodePresent_DCM_DR
EnableCond_DTC_NODE_PRESENT_DCM_PASS	CtAp_DTC_Handler	EnableCondition_NodePresent_DCM_PASS
EnableCond_DTC_NODE_NOT_PRESENT_AMP	CtAp_DTC_Handler	EnableCondition_NodeNotPresent_AMP

1 of 16 elements selected

Select the Enable Condition Port to be connected (note: the Server side of the connection shall be generated automatically after it were in the Basic Editor Screen)

OS Configuration Basic Editor Runtime System General ECU Software Components

<Filter>

Service Components > DemMaster\_0 > Service Ports > DemServices, GeneralEvtInfo, OpCycle\_IgnitionCycle, OpCycle\_PowerCycle, ClearDTC\_DemClient, OverflowIndPrimaryMemory\_DemClient, IndStatus\_WarningIndicator, CBReadData DID\_0x1921\_Bitfield

ECU Composition

- Application Ports
- Service Mappings
- Data Mapping
- Application Components
- Service Components
- BswM
- ComM
- Dt
- EcuM
- Os\_OsCore\_CORE0\_swc
- Dcm
- NvM
- DemMaster\_0

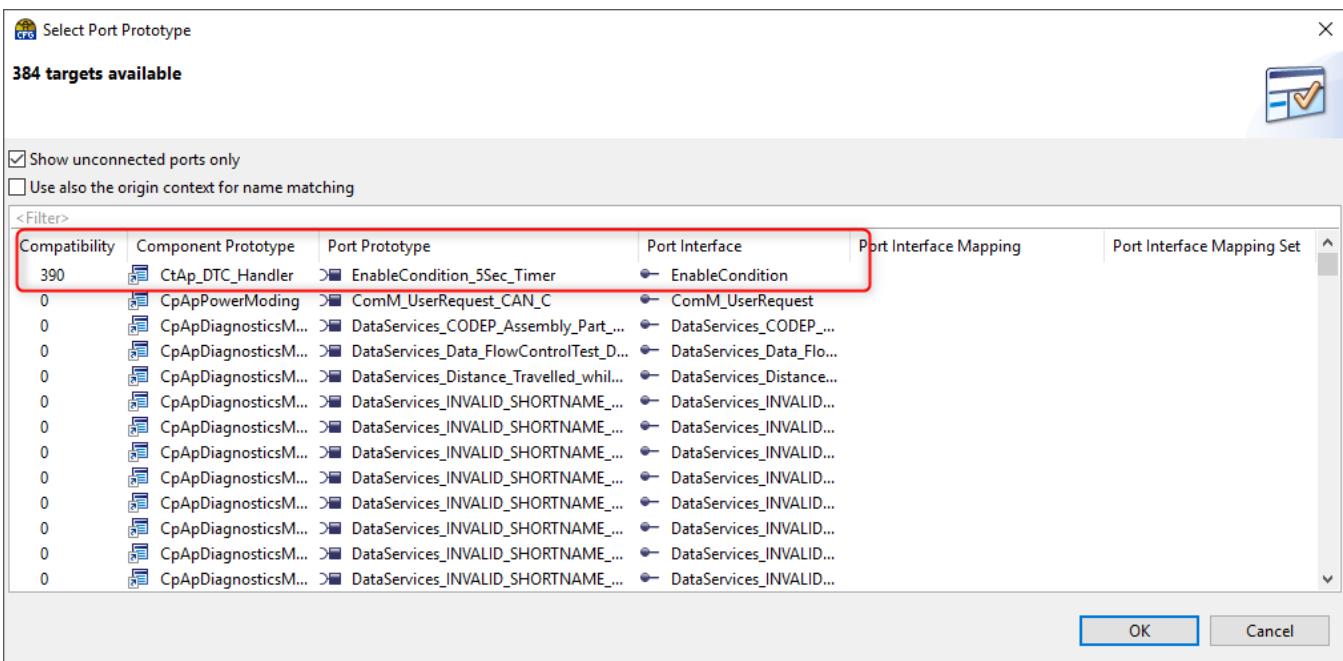
  - Application Ports
  - Service Ports
  - DemServices
  - GeneralEvtInfo
  - OpCycle\_IgnitionCycle
  - OpCycle\_PowerCycle
  - ClearDTC\_DemClient
  - OverflowIndPrimaryMemory\_DemClient
  - IndStatus\_WarningIndicator
  - CBReadData DID\_0x1921\_Bitfield
  - CBReadData DID\_0x1009\_ECU\_Time\_Since\_Ignition\_ON\_24
  - CBReadData DID\_0x2001\_Odometer\_24
  - CBReadData OccurrenceCounter\_Aging\_Counter\_ID
  - CBReadData OccurrenceCounter\_Frequency\_Counter\_ID
  - CBReadData DID\_0x1008\_ECU\_Life\_Time\_24
  - CBReadData DID\_0x1004\_Battery\_Voltage\_24
  - CBReadData DID\_0x200a\_Ignition\_ON\_Counter\_24
  - CBReadData\_OccurrenceCounter\_Cycles\_to\_Switch\_off\_the\_Wan
  - CBReadData\_OccurrenceCounter\_Cycle\_to\_switch\_WL\_off\_ID
  - FiatHknnf DTC RATT VOLTAGE IN RANGE

27 of 36 service port prototypes are connected. Use the Component Connection Assistant to create service connectors.

Port Prototype	Connected Component Prototype	Connected Port Prototype
EnableCond_DTC_BATT_VOLTAGE_IN_RANGE	CtAp_DTC_Handler	EnableCondition_Batt_Volt_In_Range
EnableCond_DTC_ENABLE_CONDITION_5Sec_TIMER	CtAp_DTC_Handler	EnableCondition_EnableCondition_5Sec_Timer
EnableCond_DTC_NETWORK_CONFIG_STATUS	CtAp_DTC_Handler	EnableCondition_Network_Config_Status
EnableCond_DTC_NO_ACTIVE_BUSSOFF_FAULT	CtAp_DTC_Handler	EnableCondition_No_Active_Busoff_Fault
EnableCond_DTC_NODE_NOT_PRESENT_AMP	CtAp_DTC_Handler	EnableCondition_NodeNotPresent_AMP
EnableCond_DTC_NODE_PRESENT_AMP	CtAp_DTC_Handler	EnableCondition_NodePresent_AMP
EnableCond_DTC_NODE_PRESENT_BCM	CtAp_DTC_Handler	EnableCondition_NodePresent_BCM
EnableCond_DTC_NODE_PRESENT_BSM	CtAp_DTC_Handler	EnableCondition_NodePresent_BSM
EnableCond_DTC_NODE_PRESENT_DCM_DR	CtAp_DTC_Handler	EnableCondition_NodePresent_DCM_DR
EnableCond_DTC_NODE_PRESENT_DCM_PASS	CtAp_DTC_Handler	EnableCondition_NodePresent_DCM_PASS
EnableCond_DTC_NODE_PRESENT_DTV	CtAp_DTC_Handler	EnableCondition_NodePresent_DTV
EnableCond_DTC_NODE_PRESENT_ECM	CtAp_DTC_Handler	EnableCondition_NodePresent_ECM
EnableCond_DTC_NODE_PRESENT_IPC	CtAp_DTC_Handler	EnableCondition_NodePresent_IPC
EnableCond_DTC_NODE_PRESENT_PAM	CtAp_DTC_Handler	EnableCondition_NodePresent_PAM
EnableCond_DTC_POWER_MODE_IGN_RUN	CtAp_DTC_Handler	EnableCondition_Power_Mode_Ign_Run

1 of 16 elements selected. Sorting by <Port Prototype>

Select the appropriate Component Prototype



Verify the connection

Port Prototype	Connected Component Prototype	Connected Port Prototype
EnableCond_DTC_BATT_VOLTAGE_IN_RANGE	CtAp_DTC_Handler	EnableCondition_Batt_Volt_In_Range
EnableCond_DTC_ENABLE_CONDITION_5Sec_TIMER	CtAp_DTC_Handler	EnableCondition_5Sec_Timer
EnableCond_DTC_NETWORK_CONFIG_STATUS	CtAp_DTC_Handler	EnableCondition_Network_Config_Status
EnableCond_DTC_NO_ACTIVE_BUSSOFF_FAULT	CtAp_DTC_Handler	EnableCondition_No_Active_Busoff_Fault
EnableCond_DTC_NODE_NOT_PRESENT_AMP	CtAp_DTC_Handler	EnableCondition_Node_NOT_Present_AMP
EnableCond_DTC_NODE_PRESENT_AMP	CtAp_DTC_Handler	EnableCondition_NodePresent_AMP
EnableCond_DTC_NODE_PRESENT_BCM	CtAp_DTC_Handler	EnableCondition_NodePresent_BCM
EnableCond_DTC_NODE_PRESENT_BSM	CtAp_DTC_Handler	EnableCondition_NodePresent_BSM
EnableCond_DTC_NODE_PRESENT_DCM_DR	CtAp_DTC_Handler	EnableCondition_NodePresent_DCM_DR
EnableCond_DTC_NODE_PRESENT_DCM_PASS	CtAp_DTC_Handler	EnableCondition_NodePresent_DCM_PASS
EnableCond_DTC_NODE_PRESENT_DTV	CtAp_DTC_Handler	EnableCondition_NodePresent_DTV
EnableCond_DTC_NODE_PRESENT_ECM	CtAp_DTC_Handler	EnableCondition_NodePresent_ECM
EnableCond_DTC_NODE_PRESENT_EVCU	CtAp_DTC_Handler	EnableCondition_NodePresent_EVCU
EnableCond_DTC_NODE_PRESENT_IPC	CtAp_DTC_Handler	EnableCondition_NodePresent_IPC
EnableCond_DTC_NODE_PRESENT_PAM	CtAp_DTC_Handler	EnableCondition_NodePresent_PAM
EnableCond_DTC_POWER_MODE_IIGN_RUN	CtAp_DTC_Handler	EnableCondition_Power_Mode_Ign_Run

## Validate and Generate

- Note: Remember Generate DEM Section as well.

**Generate**

### Generate Code

Start the validation and code generation process. Optionally the code generation run can be configured.

Generation Target: Real Target

Generation Step	Calculation	Validation	Generation
CanIf: CanIf	✓	✓	✓
CanTp: CanTp	✓	✓	✓
CanTrcv_001: CanTrcv	✗	✓	✓
Com: Com	✓	✓	✓
EcuC: EcuC	✗	✓	✓
PduR: PduR	✗	✓	✓
Complex Driver	✗	✓	✓
ARXML to A2L Converter	✗	✓	✓
CddFiat: CddFiat	✗	✓	✓
vSet: vSet	✗	✓	✓
Diagnostics	✗	✓	✓
CanTp: CanTp	✓	✓	✓
Dcm: Dcm	✓	✓	✓
Dem: Dem	✓	✓	✓
Memory	✗	✓	✓
Fee: Fee	✗	✓	✓
MemIf: MemIf	✗	✓	✓
NvM: NvM	✓	✓	✓
Mode Management	✗	✓	✓
BswM: BswM	✗	✓	✓
CanSM: CanSM	✗	✓	✓
ComM: ComM	✗	✓	✓
EcuM: EcuM	✗	✓	✓
Nm: Nm	✗	✓	✓
NmFiatB: NmFiatB	✗	✓	✓
Network Management	✗	✓	✓
BswM: BswM	✗	✓	✓
CanSM: CanSM	✗	✓	✓
ComM: ComM	✗	✓	✓
Nm: Nm	✗	✓	✓
NmFiatB: NmFiatB	✗	✓	✓
Runtime System	✗	✓	✓
Com: Com	✓	✓	✓
NvM: NvM	✓	✓	✓
Os: Os	✓	✓	✓
Rte: Rte	✓	✓	✓
ExtGen_DrvPwm	✗	✓	✓
ExtGen_DrvAdc	✗	✓	✓
ExtGen_DrvRamTst	✗	✓	✓

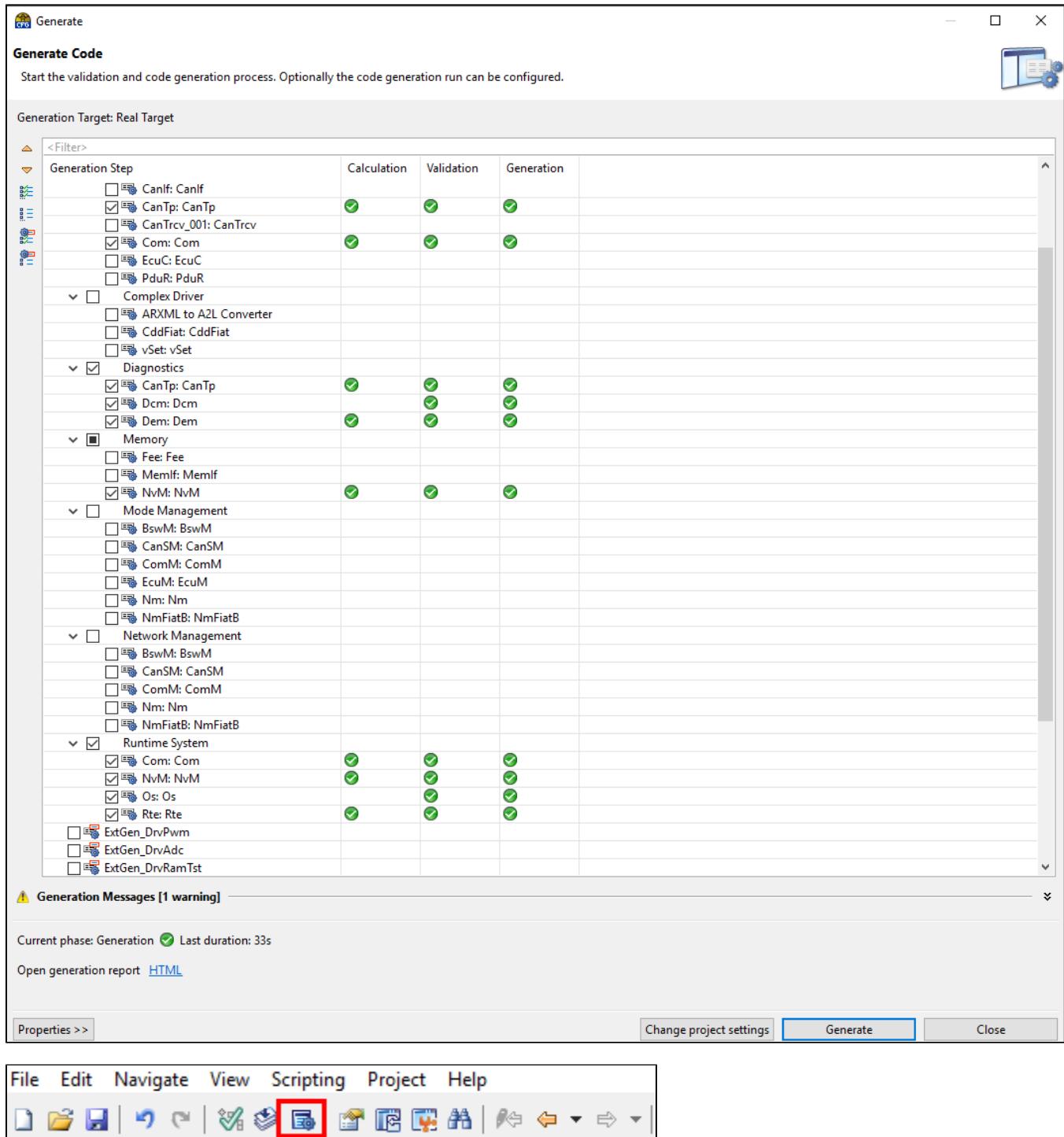
**Generation Messages [1 warning]**

Current phase: Generation ✓ Last duration: 33s

Open generation report [HTML](#)

[Properties >>](#) [Change project settings](#) [Generate](#) [Close](#)

**File Edit Navigate View Scripting Project Help**



## Implement Code for Enable Conditions

After mapping the Enable Condition Service Port to a Runnable just add the logic behind the enable condition and use the RTE Call as the image below:

```

... //Enable condition :: 9V <= Battery_voltage <= 16.5V
retVal1 = Rte_Read_PpVoltageStatus_DeVoltageStatus(&voltStatus);
if ((voltStatus) == VS_NORMAL_OPERATION)
{
    // set enable condition for battery voltage NORMAL
    retVal1 = Rte_Call_EnableCondition_Batt_Volt_In_Range_SetEnableCondition(TRUE);
    if ((retVal1 != E_OK))
    {
        DBG_PRINT(LogLevel_Info, "DTCHandler -- setting Enable condition for battery voltage to True failed %d", retVal1);
    }
    else
    {
        /* to avoid codesonar warning */
    }
}
else
{
    // clear enable condition for battery voltage NORMAL
    retVal1 = Rte_Call_EnableCondition_Batt_Volt_In_Range_SetEnableCondition(FALSE);
    if ((retVal1 != E_OK))
    {
        DBG_PRINT(LogLevel_Info, "DTCHandler -- setting Enable condition for battery voltage to False failed %d", retVal1);
    }
    else
    {
        /* to avoid codesonar warning */
    }
}
...

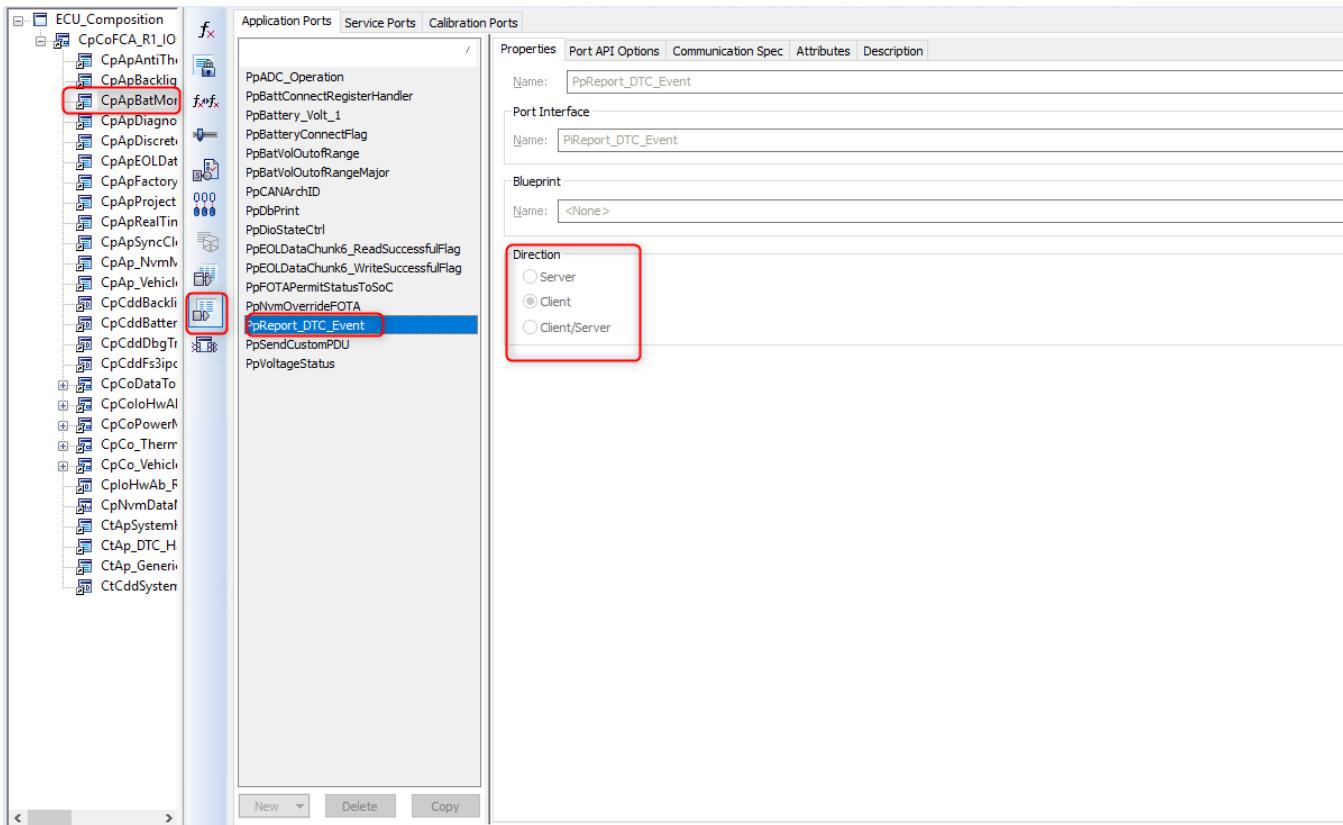
```

## Logic of the the EnableCondition

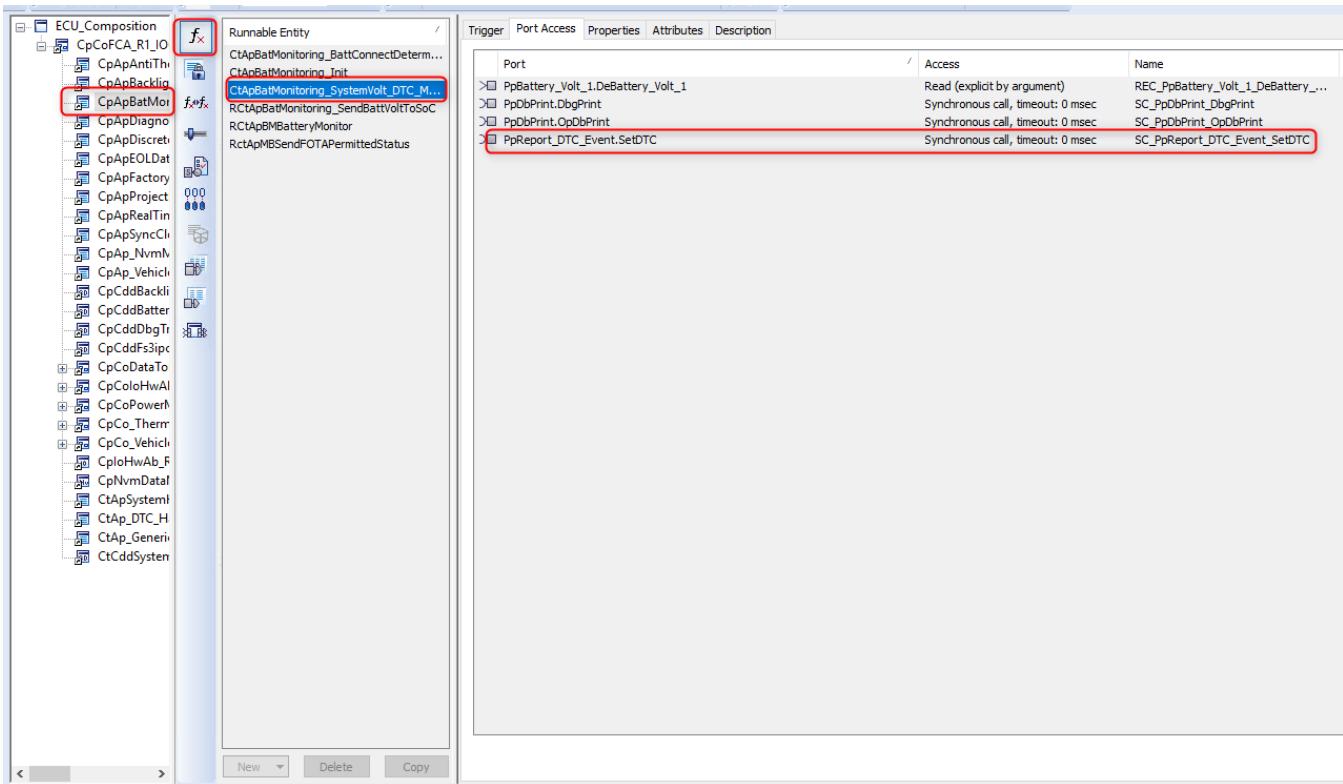
Rte Call to set the  
EnableCondition

## Implement Code for Set DTC

Need to add and Invoke operation of the CtAp\_PpReport\_DTC\_Event\_Operation runnable to the SWC that will set the DTC.



After that Give Acces to the Runnbale that will set the DTC like the image below:



After that the only call need is the following:

**Logic for set/clear the DTC**

```

if(RTE_E_OK == retVal)
{
    if(System_Volt < DTC_A10A00_THRESHOLD)
    {
        //DBG_PRINT(LogLevel_Info, "\033[31m---- SGW BODY9 CAN Signal---- DTC A10A00 \033[0m");
        (void)Rte_Call_PpReport_DTC_Event_SetDTC((uint32)DTC_0xA10A00_System_Voltage_Low,BM_FALSE);
        (void)Rte_Call_PpReport_DTC_Event_SetDTC((uint32)DTC_0xA10B00_System_Voltage_High,BM_TRUE);
    }
    else if (System_Volt <= DTC_A10B00_THRESHOLD)
    {
        (void)Rte_Call_PpReport_DTC_Event_SetDTC((uint32)DTC_0xA10A00_System_Voltage_Low,BM_TRUE);
        (void)Rte_Call_PpReport_DTC_Event_SetDTC((uint32)DTC_0xA10B00_System_Voltage_High,BM_TRUE);
    }
    else
    {
        //DBG_PRINT(LogLevel_Info, "\033[31m---- SGW BODY9 CAN Signal---- DTC A10B00 \033[0m");
        (void)Rte_Call_PpReport_DTC_Event_SetDTC((uint32)DTC_0xA10A00_System_Voltage_Low,BM_TRUE);
        (void)Rte_Call_PpReport_DTC_Event_SetDTC((uint32)DTC_0xA10B00_System_Voltage_High,BM_FALSE);
    }
}
else
{
    //Error reading BODY 9 Signal, error message logged
    DBG_PRINT(LogLevel_Error, "\033[31m---- SGW BODY9 CAN Signal---- Error during reading signal \033[0m");
}

```

## IOC Periodically Monitoring Function

For the DEM to properly function it's need ed a periodic runnable to keep track fo the Internal Debounce Counter (Maturation and Dematuration counters).

### Formula

To determine the Pass/Fail increments please use the following logic

**Passing/Failing Increments to be configured: (Autosar Passing/failing Treshold) / ((Maturation time) / (Period of the runnable of the monitoring))**

## DTC Debounce Counter Example:

Periodical Runnable for DTC Monitoring: 500ms

Passing Counter Threshold: -128 (Defined by UDS)

Failing Counter Treshold: +127 (Define UDS)

Maturation/De-maturation time defined by OEM: 15 seconds

Passing/Failing Increments to be configured: (15s)/(0.5s) = 30 steps from not base to confirmation.

-128/30 = 4.26

127/30 = 4.23

So as the counter need to be an integer selecting 4 would not work due it will cross the 15 seconds expected by OEM, the selection could be 5, which will trigger the DTC in 13 seconds.



### Note

This is based on Developer desicion, any of both value are valid (4 or 5 per step increment).

In R1 and FPDM the function is excecuted every 500ms this means this is the base of the counter.

```
/* DO NOT CHANGE THIS COMMENT! << End_of_documentation_area >> DO NOT CHANGE THIS COMMENT! */
*****  
FUNC(void, CtAp_DTC_Handler_CODE) CtAp_Monitor_Internal_DTC(void) /* PRQA S 0850 */ /* MD_MSR_19.8 */  
{  
    /* DO NOT CHANGE THIS COMMENT! << Start_of_runnable_implementation >> DO NOT CHANGE THIS COMMENT! */  
    /* Symbol: CtAp_Monitor_Internal_DTC */  
    *****  
    uint8 index;  
    Std_ReturnType retVal = 0;  
    uint8 settingDTCPending = 0;  
    uint8 InputDtcStatus = DTC_STATUS_PREFAILED;  
    uint8 setDtcStatus = DEM_EVENT_STATUS_PREFAILED;  
      
    for (index = 0; index < (uint8)MAX_DTC; index++)  
    {  
        //Check MSB(b7) of DTC_Cache_Status to see if setting DTC is done or pending  
        settingDTCPending = ((DTC_Cache_Status[index] >> SETTING_DTC_PENDING_BIT) & 0x01u);  
          
        //Check MSB is set, it denotes that setting DTC is pending  
        if (settingDTCPending != 0x0U)  
        {  
            //Check LSB(b0) of DTC_Cache_Status to see if status to be set is Passed(1) or Failed(0).  
            InputDtcStatus = (DTC_Cache_Status[index] & 0x01u);  
              
            //map input DTC status from other SWCs to DEM event status  
            if (InputDtcStatus == 0x1U)  
            {  
                setDtcStatus = DEM_EVENT_STATUS_PRAPASSED;  
            }  
            else  
            {  
                setDtcStatus = DEM_EVENT_STATUS_PREFAILED;  
            }  
        }  
          
        if((DTC_STATUS_FUNC[index].DTC_Set_Event) != NULL)  
        {  
            /* Invoking the DEM API to set/clear a DTC event ID and checking the return value */  
            retVal = (DTC_STATUS_FUNC[index].DTC_Set_Event)(setDtcStatus);  
            if(retVal == SETTING_DTC_DONE)  
            {  
                //clear the MSB of DTC cache to indicate that setting DTC is successfully  
                //No retry needed  
                Rte_Enter_EA_DTCCriticalSection();  
                DTC_Cache_Status[index] = (DTC_Cache_Status[index] & CLEAR_SETSTATUS_PENDING_BIT);  
                Rte_Exit_EA_DTCCriticalSection();  
                  
                //This is the first DTC detected with Failed status  
                if ((FirstDTCDetected == FALSE) && (InputDtcStatus != PASSED))  
                {  
                    //read ECU life time and ECU time since ignition On, when first DTC is detected  
                    (void)Get_ECU_TimeStamps(&TimeOfFirstDTCInECULife, &TimeOfFirstDTCSinceIgnition);  
                    FirstDTCDetected = TRUE;  
                }  
                else  
                {  
                    /* no need to read timestamp values at this point */  
                }  
            }  
        }  
    }  
}
```

## IOC DTC List and Utility

For easy Maintenance and Scalability the DTC utility and List are implemented in R1.

These files are provide the basic structure for the whole usage of the DTC on a Application level.

## DTC Utility

This file will provide the information on how to use the DTC List, defining the "Entry type" (Kind of the format to be used), the file containing the DTC to be used.

```
14
15  ****S·Y·S·T·E·M···I·N·C·L·U·D·E·S·
16  ****
17  ****
18
19 #ifndef DTC_UTILITY_H
20 #define DTC_UTILITY_H
21
22 #include "dtc_list.h"
23
24  ****
25  ***T·Y·P·E·D·E·F·S·
26  ****
27
28 /* DTC IDs */
29 typedef enum DTC_ID_Tag
30 {
31 #ifdef DTC_ENTRY_TYPE
32     #undef DTC_ENTRY_TYPE
33 #endif
34 #define DTC_ENTRY_TYPE DTC_CODE_NAME
35 #include "dtc_list.h"
36 MAX_DTC
37 } DTC_ID;
38
39
40  ****
41  ***M·A·C·R·O···D·E·F·I·N·I·T·I·O·N·S·
42  ****
43
44
45
46  ****
47  ***E·X·T·E·R·N···D·E·C·L·A·R·A·T·I·O·N·S·
48  ****
49
50
51
52 #endif //DTC_UTILITY_H
53
```

## DTC List

In this list are defined all the DTC present in the project with the RTE calls for the Internal Monitoring Runnable to work.

The List contains the following:

- Short Name fo the DTC: Pink box below.
  - DTC Number: Blue box below.
  - RTE Set Event Call: Red box below.
  - RTE Get Event Call: Green box below.

```

0@ /******T-Y-P-E-D-E-F-S*****/
1
2
3
4 #ifndef DTC_CODE
5 ...#define DTC_CODE .....(1)#
6 #endif#
7
8 #ifndef DTC_CODE_NUMBER
9 ...#define DTC_CODE_NUMBER .....(2)#
10 #endif#
11
12 #ifndef DTC_CODE_NAME
13 ...#define DTC_CODE_NAME .....(3)#
14 #endif#
15
16 #ifndef DTC_SET_AND_GET_FUNCTION
17 ...#define DTC_SET_AND_GET_FUNCTION .....(4)#
18 #endif#
19
20
21 #ifdef DTC_ENTRY_TYPE
22 ...
23 ...#ifdef DTC_DEF
24 ...#undef DTC_DEF
25 ...#endif#
26
27 ...#if DTC_ENTRY_TYPE==DTC_CODE
28 ...#define DTC_DEF(name, code, setStatus, getStatus)...DTC_#code,#
29 ...#elif DTC_ENTRY_TYPE == DTC_CODE_NUMBER
30 ...#define DTC_DEF(name, code, setStatus, getStatus) ...{code},#
31 ...#elif DTC_ENTRY_TYPE == DTC_CODE_NAME
32 ...#define DTC_DEF(name, code, setStatus, getStatus)...DTC_#code##_##name,#
33 ...#elif DTC_ENTRY_TYPE == DTC_SET_AND_GET_FUNCTION
34 ...#define DTC_DEF(name, code, setStatus, getStatus) ...{setStatus, getStatus},#
35 ...#endif#
36
37 .../*
38 ... DTC_DEF(Circuit_Voltage_Below_Threshold, ..... 0xE12A16)#
39 ... DTC_DEF(Circuit_Voltage_Above_Threshold, ..... 0xE12A17)#
40 ... */
41
42 ... DTC_DEF(FL_Speaker_Circuit_Short_to_Ground, ..... 0x940011, Rte_Call_B140011_DiagnosticMonitor_SetEventStatus, Rte_Call_B140011_DiagnosticInfo_GetEventStatus)#
43 ... DTC_DEF(FL_Speaker_Circuit_Short_to_Battery, ..... 0x940012, Rte_Call_B140012_DiagnosticMonitor_SetEventStatus, Rte_Call_B140012_DiagnosticInfo_GetEventStatus)#
44 ... DTC_DEF(FL_Speaker_Circuit_Open, ..... 0x940013, Rte_Call_B140013_DiagnosticMonitor_SetEventStatus, Rte_Call_B140013_DiagnosticInfo_GetEventStatus)#
45 ... DTC_DEF(FL_Speaker_Circuit_Resistance_Below_Threshold, ..... 0x94001A, Rte_Call_B14001A_DiagnosticMonitor_SetEventStatus, Rte_Call_B14001A_DiagnosticInfo_GetEventStatus)#
46 ... DTC_DEF(FL_Speaker_Performance_Incorrect_Operation, ..... 0x940092, Rte_Call_B140092_DiagnosticMonitor_SetEventStatus, Rte_Call_B140092_DiagnosticInfo_GetEventStatus)#

```

## SOC Side of DTC Implementation

### Troubleshoot

Based on the previous Experience there are some Problems that can be encountered, so the following are things to consider in case of an error:

- **DTC is Always reporting 0x50 when requested status:**

This is due to the enable conditions are not been set as True. Please check the AUTOSAR Enable Conditions and Enable Conditions Group to verify the proper setting of both for the AUTOSAR Package start to monitor that DTC status.

- **DTC event not in the AUTOSAR Cfg:**

Please verify that the DTC is on the DBC file, adding manually a DTC into the AUTOSAR Platform is possible but after the next DBC integration that manually added DTC will be eliminated.

- **DTC not been set after checking Enable Conditions and Proper Configuration:**

An important aspect of the DTC Configuration is the Operational Cycle, please verify this (See Autosar Configuration for more information).

- **Make sure the Enable Conditions support is enabled.**

This option help to create the Service Ports in the Dem\_Master Component, and it is needed for the proper enabling of the DTC's.

- **Make sure all the configurations are done before any SWC.**

By experience the DTC\_SWC is usually linked to the DEM and DCM Configuration, so in some cases the modification of DEM and DCM Cfg crashed with the SWC due the AUTOSAR Configurator "create a Different" after a configuration change.

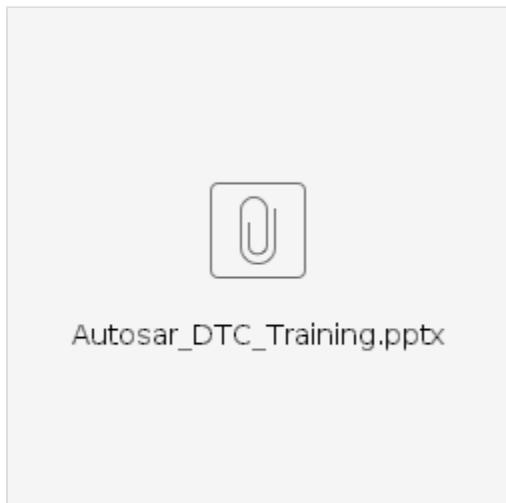
- **If a DTC Handler SWC is imported from other project, make sure any error is present.**

In some use case some issue like the following image was present, even though the errors are present the Configurator is still capable of generating new code but some modifications are not Sync due to the error.

2 messages in 2 categories. Hiding <Warnings> and <Infos>.		
ID	Message	Ack
▲ ✘ DCM94992	<p>Swc description (External) is out of sync to Ecu configuration (1 message)</p> <p>The Swc description of the module /MICROSAR/Dcm is out of sync. There are Swc description elements, which have no corresponding EcuC element. But some of these elements are located in external files and cannot be synchronized by the DaVinci Configurator. You have to remove these elements (see erroneous elements) manually in the external tool which has created the elements.</p> <p>External element paths:</p> <ul style="list-style-type: none"> <li>'C:/Eclipse/FPDM_Mainline/vipsw/trunk/src/autosar/Config/Developer/DataTypes.xml'</li> <li>'C:/Eclipse/FPDM_Mainline/vipsw/trunk/src/autosar/Config/Developer/PortInterfaces.xml'</li> </ul>	
► ✘ DCM94992	<p>Swc description (External) is out of sync to Ecu configuration (1 message)</p> <p>The Swc description of the module /MICROSAR/Dem is out of sync. There are Swc description elements, which have no corresponding EcuC element. But some of these elements are located in external files and cannot be synchronized by the DaVinci Configurator. You have to remove these elements (see erroneous elements) manually in the external tool which has created the elements.</p> <p>External element paths:</p> <ul style="list-style-type: none"> <li>'C:/Eclipse/FPDM_Mainline/vipsw/trunk/src/autosar/Config/Developer/PortInterfaces.xml'</li> </ul>	
1.	<p>The Swc description of the module /MICROSAR/Dcm is out of sync. There are Swc description elements, which have no corresponding EcuC element. But some of these elements are located in external files and cannot be synchronized by the DaVinci Configurator. You have to remove these elements (see erroneous elements) manually in the external tool which has created the elements.</p> <p>External element paths:</p> <ul style="list-style-type: none"> <li>'C:/Eclipse/FPDM_Mainline/vipsw/trunk/src/autosar/Config/Developer/DataTypes.xml'</li> <li>'C:/Eclipse/FPDM_Mainline/vipsw/trunk/src/autosar/Config/Developer/PortInterfaces.xml'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Confirmation/ConfirmationStatus'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication/SourceAddress'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication/SID'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication/ErrorCode'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Confirmation/SourceAddress'</li> <li>'/MICROSAR/Dcm_swc/DataTypes/Dcm_Data4100ByteType/Dcm_Data4100ByteTypeElement'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Confirmation/SID'</li> <li>'/MICROSAR/Dcm_swc/DataTypes/Dcm_Data4100ByteType'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication/RequestData'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication/DataSet'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Confirmation'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Confirmation/ReqType'</li> <li>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification'</li> </ul> <p>4100</p> <p>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/E_NOT_OK'</p> <p>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/Indication/ReqType'</p> <p>'/MICROSAR/Dcm_swc/Interfaces/ServiceRequestNotification/E_REQUEST_NOT_ACCEPTED'</p>	
▲ ✘ DEM94992	<p>Swc description (External) is out of sync to Ecu configuration (1 message)</p> <p>The Swc description of the module /MICROSAR/Dem is out of sync. There are Swc description elements, which have no corresponding EcuC element. But some of these elements are located in external files and cannot be synchronized by the DaVinci Configurator. You have to remove these elements (see erroneous elements) manually in the external tool which has created the elements.</p> <p>External element paths:</p> <ul style="list-style-type: none"> <li>'C:/Eclipse/FPDM_Mainline/vipsw/trunk/src/autosar/Config/Developer/PortInterfaces.xml'</li> <li>'/MICROSAR/Dem_swc/Interfaces/CallbackDTCStatusChange'</li> <li>'/MICROSAR/Dem_swc/Interfaces/CallbackDTCStatusChange/DTCStatusChanged/DTCStatusNew'</li> <li>'/MICROSAR/Dem_swc/Interfaces/CallbackDTCStatusChange/E_NOT_OK'</li> <li>'/MICROSAR/Dem_swc/Interfaces/CallbackDTCStatusChange/DTCStatusChanged'</li> <li>'/MICROSAR/Dem_swc/Interfaces/CallbackDTCStatusChange/DTCStatusChanged/DTC'</li> <li>'/MICROSAR/Dem_swc/Interfaces/EnableCondition'</li> <li>'/MICROSAR/Dem_swc/Interfaces/EnableCondition/SetEnableCondition'</li> <li>'/MICROSAR/Dem_swc/Interfaces/EnableCondition/ConditionFulfilled'</li> <li>'/MICROSAR/Dem_swc/Interfaces/EnableCondition/E_NOT_OK'</li> <li>'/MICROSAR/Dem_swc/Interfaces/CallbackDTCStatusChange/DTCStatusChanged/DTCStatusOld'</li> </ul>	
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## AUTOSAR DTC Training

QRO CC SW Team create the following trainign crash course for a better understanding.



There is a recorded video of the session but sadly it was given in Spanish.. Later it will be open for more people and will be given in English.

<https://transfer.harman.com/link/sFX3YhlKdu13Ud1MOKNB9>



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