AUTOSAR Dcm User Manual

1.1 Document Change Histroy

Date (YYYY-MM-DD)	Ver.	Editor	Chap	내용(개정 전 -> 개정 후)
2016-04-18	1.0.0	SG. Baek	All	• Initial Creation
2016-05-25	1.0.1	J. Jung	All	• Renewal
2016-05-30	1.0.2	J. Jung	6.1.1	• Dcm 1.1.0 Update
2016-07-15	1.0.3	J. Jung	6.1.4.4 10.2.1	• Dcm 1.1.1 Update
2016-10-16	1.0.4	J. Jung	5.4 7.3.1 10.2, 10.3	• Dcm 1.1.2 Update
2016-10-28	1.0.5	J. Jung	5.4.2 6.1.1	• Dcm 1.2.0 Update
2016-11-16	1.0.6	J. Jung	6.1.4	• Dcm 1.2.1 Update
2016-12-07	1.0.7	J. Jung	5.3	• Dcm 1.2.2 Update
2017-01-10	1.0.8	J. Jung	5.3 6.1.2 8.2.1	• Dcm 1.3.0 Update
2017-02-17	1.0.9	J. Jung	5.3 5.4 7.3 10.4	• Dcm 1.3.1 Update
2017-03-28	1.0.10	J. Jung	6.1.3	• Dcm 1.4.0 Update

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Creation	Check	Approval
YJ Yun 2021/09/22	SH YOO 2021/09/02	SH YOO 2021/09/22

			10.5 10.6	
2017-04-14	1.0.11	J. Jung	5.3	• Dcm 1.4.1 Update
2017-04-14	1.0.12	J. Jung	5.3 3 10.1 10.2	• Dcm 1.5.0 Update (5.3 Change Log 참고) - Seed, RandomSeed 용어 설명 추가 - Dcm_GetRandomSeed(), Dcm_GetPublicKey callout 함수 및 가이드 추가 - Seed-Key (L1), Advanced Seed-Key (L9) Sample Code 수정 및 Appendix 10.2 SecurityAccess Sample Code로 통합
2017-05-30	1.0.13	J. Jung	5.3	• Dcm 1.5.1 Update (Change Log 참고)
2017-06-08	1.0.14	J. Jung	5.3 5.4.2	• Dcm 1.5.2 Update (Change Log 참고) - AUTOSAR_SWS_DiagnosticCommunicationManager 4.2.2 일부 적용 : DcmDslDiagRespMaxNumRespPend
2017-06-28	1.0.15	J. Jung	5.3	• Dcm 1.6.0 Update (Change Log 참고)
2017-10-31	1.0.16	YJ. Yun	5.3 10.2	• Dcm 1.7.0 Update (Change Log 참고)
2017-11-10	1.0.17	YJ. Yun	5.3	• Dcm 1.7.1 Update (Change Log 참고)
2017-11-23	1.0.18	YJ. Yun	11.1.3.1 11.2	• 의사난수를 사용한 C-SAC 적용시 Dcm_GetRandomSeed() 를 통한 Seed 업데이트 주의 사항 추가 • Security Access 예제 수정
2018-03-28	1.0.19	YS. Jeon	1 5.3 6.1.1	• Dcm 1.7.3 Update (Change Log 참고)
2018-06-19	1.0.20	YS. Jeon	5.3 5.4.2 6.1.1 6.1.4.5	• Dcm 1.8.0 Update (Change Log 참고) - ES95486-50 사양 지원 - Indication Callback ASR 4.3.0 적용 - DcmTimStrP2(Star)ServerAdjust Max값 변경 - DcmDspSessionP2(Star)ServerMax Max값 변경
2018-09-12	1.0.21	YS. Jeon	5.3 6.1.1	• Dcm 1.9.0 Update (Change Log 참고) - QZN04 사양 지원 - SID31 Subfunction NRC 우선 순위 변경
2018-09-18	1.0.22	YS.	5.3	• Dcm 1.9.1 Update (Change Log 참고) - Dcm.exe file 새로 생성

		Jeon		- RTRT 동적검증 Dcm 수정
2018-11-08	1.0.23	YS. Jeon	5.3 10.1.2.1.1 10.2.2.1.2 .4	• Dcm 1.9.2 Update (Change Log 참고) - RoutineControl stop DataIn 수정 - RemainUnlockCondition 기능 추가 - Dcm_GetCertificationInfo 설명 추가 - F1KM에 HSM 적용
2018-11-19	1.0.24	YS. Jeon	5.3	• Dcm 1.9.3 Update (Change Log 참고) - Security Level L21 이타스 Library에서 오토에버 Library 적용
2019-02-19	1.0.25	YS. Jeon	5.3	• Dcm 1.9.4 Update (Change Log 참고)
2019-06-21	1.0.26	YS. Jeon	5.3 5.4.1 6.1.1	• Dcm 1.9.5 Update (Change Log 참고) • DcmGeneral에 DcmRemainUnlockCondition 추가 • Limitaions에 READDTCINFORMATION SERVICE의 미지원 Sub-function들 명기
2019-07-29	1.0.27	YS. Jeon	5.3 5.4.1 6.1.1	• Dcm 2.0.0 Update (Change Log 참고) • DcmGeneral에 DcmForcedEcuReset 추가 • Limitaions에서 RequestDownload, TransferData, RequestTransferExit 미지원 삭제
2019-09-11	1.0.28	EK. Kim	5.3 6.1.5	• Dcm 2.1.0 Update (Change Log 참고) • DcmDspDataBlockIdRef 기능 지원 추가
2019-10-10	1.1.0	EK. Kim	5.3 6	• Dcm 2.1.0.0 Update (Change Log 참고) • 설정 항목 속성 변경
2019-12-11	1.1.1	YJ. Yun	5.3 6	• Dcm 2.1.1.0 Update (Change Log 참고) • 설정 항목 속성 변경
2019-12-16	1.1.2	EK. Kim	5.3 7.1.5 10.1.4	• Dcm 2.2.0.0 Update (Change Log 참고) • Dcm_NegativeResponseCodeType 추가 • Security Access 2.0 Guide 추가
2020-04-06	1.1.3	EK. Kim	5.3 6.1.1, 6.1.5 7.3 10.1.4	• Dcm 2.3.0.0 Update (Change Log 참고) • 설정 항목 추가 및 변경 • Interface 추가 • Security Access 2.0 Guide 변경
2020-04-13	2.3.1	EK. Kim	10.2.2.1	• Advanced Seedkey Reference code 설명 개선 (reference code 최신화)
2020-10-15	2.3.1.0	YJ. Yun	5.3	• Dcm 2.3.1.0 Update (Change Log 참고)
2020-11-04	2.3.2.0	EK. Kim	5.3	• Dcm 2.3.2.0 Update (Change Log 참고)
2021-01-13	2.3.3.0	EK. Kim	5.3	• Dcm 2.3.3.0 Update (Change Log 참고)
2021-01-28	2.3.4.0	EK.	5.3	• Dcm 2.3.4.0 Update (Change Log 참고)

		Kim		
2021-03-17	2.3.5.0	EK. Kim	5.3	• Dcm 2.3.5.0 Update (Change Log 참고)
2021-03-31	2.3.6.0	EK. Kim	5.3	• Dcm 2.3.6.0 Update (Change Log 참고)
2021-04-19	2.3.7.0	EK. Kim	5.3	• Dcm 2.3.7.0 Update (Change Log 참고)
2021-04-30	2.3.8.0	SK. Park	5.3 6.1.5.9.2	• Dcm 2.3.8.0 Update (Change Log 참고) • Note 추가
2021-06-02	2.3.8.1	SK. Park	7.3.1.2 10.2.2.1.2	• GetSesCtrlType 명세 수정 (Change Log 참고) • 설명 추가 및 AppDcm_GetSeed_L9 내 RandomGenerate 함수명 변경
2021-06-11	2.3.9.0	SK. Park	5.3 7.3.12	• Dcm 2.3.9.0 Update (Change Log 참고) • Xxx_Start(), Xxx_Stop(), Xxx_RequestResults() 함수 Return Value Description 내 DCM_E_PENDING 추가
2021-06-17	2.3.2.1	JH Lim	5.3	• Dcm 2.3.2.1 Update (Change Log 참고)
2021-06-17	2.3.10.0	SK. Park	5.3	• Dcm 2.3.10.0 Update (Change Log 참고)
2021-07-05	2.3.11.0	YJ.Yun	5.3	• Dcm 2.3.11.0 Update (Change Log 참고)
2021-09-08	2.3.11.1	DK.NAM	10.1.5	• Engine Condition에 따른 진단서비스 제약 조건 가이드
2021-09-21	2.3.12.0	YJ.Yun	5.3	• Dcm 2.3.12.0 Update (Change Log 참고)
2021-10-01	2.3.13.0	YJ.Yun	5.3	• Dcm 2.3.13.0 Update (Change Log 참고)
2021-11-12	2.3.14.0	KH.Kim	5.3	• Dcm 2.3.14.0 Update (Change Log 참고)
2021-12-13	2.3.15.0	KH.Kim	11.2.2.1.2	• Autoever HSM 2.0 사용하여 True random generate 사용시 주의사항 추가 • Dcm 2.3.15.0 Update (Change Log 참고) • 8.3.13.3, 8.3.13.4 Input parmater OpStatus 설명 내용 추가 • AppDcm_GetRandomSeed함수 설명 주석 추가
2021-12-31	2.3.16.0	LanhLT	6.3	• Dcm 2.3.16.0 Update (Change Log 참고)
2022-01-12	2.3.17.0	KH.Kim	6.3	• Dcm 2.3.17.0 Update(Change Log 참고)
2022-01-25	2.3.18.0	KH.Kim	6.3 11.1.2.1.1	• Dcm 2.3.18.0 Update(Change Log 참고) • Dcm_GetCerHolderReference API 설명 추가

2022-02-25	2.4.0.0	DK.Nam	6.3	• Dcm 2.4.0.0 Update(Change Log 참고)
2022-02-25	2.4.0.0	KH.Kim	6.3 11.1.2.1.1 9.2.1	• Dcm 2.4.0.0 Update(Change Log 참고) • Dcm_GetCerHolderReference API 삭제 및 Dcm_GetCertificationInfo API 설명 추가 • Not supported, fixed, changeable 항목 점검 • ES사양 불만족시 error message 추가
2022-05-27	2.5.0.0	LanhLT	6.3	• Dcm 2.5.0.0 Update(Change Log 참고)
2022-08-12	2.5.1.0	LanhLT	6.3	• Dcm 2.5.1.0 Update(Change Log 참고)
2022-09-22	2.5.3.0	LanhLT	6.3, 9.2.1	• Dcm 2.5.2.0 Update (Change Log 참고) • Add new error message
2022-09-30	2.6.0.0	LanhLT	6.3, 6.4.1, 7.1, 8.1, 8.3.1, 9.2.1, 10.1.1	• Add Authentication Service
2022-11-29	2.6.0.1	KH Kim	7.1.4.1, 6.3	• Rxswin 사용시 buffer size 주의 사항 추가 • Dcm 2.6.0.1 update (Change Log 참고)
2023-01-18	2.6.1.0	KT Kim	6.3 9.2.1 7.1.4.4	• Dcm 2.6.1.0 Update (Change Log 참고) • 신규 에러 메시지 추가 • DcmDslProtocolRxConnectionId 추가
2023-04-19	2.6.3.0	SY Kim	6.2, 6.3, 6.4.2, 8.3.14	• Dcm 2.6.3.0 Update (Change Log 참고) • Authentication service를 위한 user defined 함수 추가 (Dcm_Authentication_User_CallOut)
2023-04-24	2.6.4.0	KT Kim	6.3	• Dcm 2.6.4.0 Update(Change Log 참고)
2023-05-26	2.6.5.0	KT Kim	6.3 7.1.4.3	• Dcm 2.6.5.0 Update(Change Log 참고) • DcmDslDiagRespOnSecondDeclinedRequest 미지원으로 변경
2023-06-26	2.6.5.0_hotfix	GS Ryu	6.3 7.1.4.4.1 9.2.1	• Dcm 2.6.5.0_hotfix Update(Change Log 참고) • DcmDslConnection에서 DcmDslProtocolRxConnectionId 파라미터 삭제 • ConnecionID 관련 메세지 ERR053221, ERR053222 취소선 처리
2023-07-31	2.7.0.0	EK Kim	6.2, 6.3 7.1.5.10 7.1.5.11 7.1.5.17 7.1.5.18 9.2.1	• Dcm 2.7.0.0 Update(Change Log 참고) • DcmDspPid 설정 변경 (N -> C) • DcmDspRequestControl 설정 변경 (N -> C) • DcmDspTestResultByObdmid 설정 변경 (N -> C) • DcmDspVehInfo 설정 변경 (N ->C) • DcmDspReadDTCInformationSupportedObdUdsDtcSeparation 설정 추가 • Authentication (Vendor Specific) 추가
2023-08-28	2.7.1.0	SY Kim	6.3	• Dcm 2.7.1.0 Update(Change Log 참고)
2023-11-16	2.8.0.0	SY Kim	6.3 7.1.5.20.2	• Dcm 2.8.0.0 Update(Change Log 참고) • DcmDspAuthenticationConnectionES 추가

2023-11-27	2.9.0.0	GS Ryu	6.3 7.1.1	• Dcm 2.9.0.0 Update(Change Log 참고) • Fbl 파라미터 관련 DcmFblUsedType 변경
2023-12-29	2.10.0.0	SY Kim	6.3 7.1.5.22 8.3.16 9.2.1	• Dcm 2.10.0.0 Update(Change Log 참고) • RequestFileTransfer Service 추가
2024-01-04	2.10.1.0	GS Ryu	6.3 7.1.5.9 8.3.4	• Dcm 2.10.1.0 Update(Change Log 참고) • RequestDownload, RequestUpload 관련 문구 삽입 (Range Check 필요 시 Callout 에 구현 필요함)
2024-01-31	2.11.0.0	DH Kwak	6.2, 6.3	• Dcm 2.11.0.0 Update (Change Log 참고
2024-02-23	2.11.0.0_HF1	GS Ryu	6.3 7.1.5.14	• DCM 2.11.0.0_HF1 Update(Change Log 참고) • DcmDspDidDataPos 은 8의 배수로 입력해야한다는 내용 추가
2024-04-23	2.11.1.0	JH Hong	6.3	• Dcm 2.11.1.0 Update(Change Log 참고)
2024-04-26	2.12.0.0	SY Kim	6.2, 6.3 7.1.1 7.1.5.14	• Dcn 2.12.0.0 Update(Change Log 참고) • DcmSecureFlashSupport 설정 삭제 • DcmRoutineInfo Role 설정 추가
2024-04-30	2.9.0.0 _HF1	JH Lee	6.3	• Dcm 2.9.0.0_HF1 Update(Change Log 참고)
2024-06-28	2.12.0.0_HF1	JH Hong	6.3	• Dcm 2.12.0.0_HF1 업데이트 (Change Log 참고)
2024-07-11	2.13.0.0	JH Lee	6.3	• Dcm 2.13.0.0 Update(Change Log 참고) • 8.3.4 Note 내용 삭제 • 10.1.1 Service ID(0x41) 추가
2024-07-26	2.9.0.0 _HF2	JH Lee	6.3	• Dcm 2.9.0.0_HF2 추가 (Change Log 참고)
2024-08-30	2.13.1.0	JH Lee	6.3 7.1	• Dcm 2.13.1.0 업데이트 (Change Log 참고) • 7.1 DcmGeneral 항목 추가
2024-09-10	2.13.0.0_HF1	JH Hong	6.3	• Dcm 2.13.0.0_HF1 업데이트 (Change Log 참고)
2024-10-11	2.14.0.0	HW Seo	6.3 6.4.2 7.1.5.15 7.1.5.15.1 8.3.7.1.4 8.3.7.1.5 9.2.1 11.2.3	• Dcm 2.14.0.0 업데이트 (Change Log 참고) • DcmDslDiagRespMaxNumRespPend type 수정 • DcmDspSecurity 설정 추가 • DcmDspSecurityRow 설정 추가 • SecurityAccess_{SecurityLevel}의 Xxx_{Get/Set}SecurityAttemptCounter asynchronous operations 추가 • Generator error message 추가 • Xxx_{Get/Set}SecurityAttemptCounter 사용 예제 추가

			11.2.4	

Table of Contenets

2 Overview

본 문서는 진단 스택 파라미터 설정 또는 시스템 설계를 할 때 주의하거나 참고할 사항을 제공한다.

자세한 사항은 Reference 문서를 참고한다.

Note : 본 문서는 AUTOSAR 진단 스택 및 HMC ES95486-00 과 ES95486-02 에 기반한다.

설정관련 Category 의 해석은 다음과 같다.

- Changeable (C): User 에 의해서 설정 가능한 항목
- Fixed (F): User 에 의한 변경이 불가한 항목
- NotSupported (N): 사용되지 않는 항목

3 Reference

Sl. No.	Title	Version
1.	AUTOSAR BSW Service API Guide.doc	1.0.0 or later
2.	AUTOSAR_SWS_DiagnosticCommunicationManager.pdf	4.2.0
3.	ES95486-00.pdf	1.9.0 or later
4.	ES95486-02.pdf	1.1.1 or later

4 Acronyms and abbreviations

Acronym:	*Description:*
N_OK	Not OK
Channel	A link at which a data transfer can take place. If there is more than one Channel, there is normally some kind of ID assigned to the Channel.
Diagnostic Channel	A link at which a data transfer between a diagnostic tool and an ECU can take place. Example: An ECU is connected via CAN and the diagnostic channel has an assigned CAN-ID. Diagnostic channels connected to other bus-systems such as MOST, FlexRay, LIN, etc. are also possible.
External Diagnostic Tool	A device which is NOT permanently connected to the vehicle communication network. This External Diagnostic Tool can be connected to the vehicle for various purposes, as e.g. for: • development, • manufacturing, and • service (in a garage). Example External Diagnostic Tools are: • a diagnostic tester, • an OBD scan tool. The External Diagnostic Tool is to be connected by a mechanic to gather information from “inside” the car.
Functional Addressing	The diagnostic communication model where a group or all nodes of a specific communication network receive a message from one sending node (1-n communication). This model is also referred to as ‘broadcast’ or ‘multicast’. OBD communication will always be done in the Functional Addressing mode.
Internal Diagnostic Tool	A device/ECU which is connected to the vehicle communication network. The Internal Diagnostic Tool can be used for: advanced event tracking, advanced analysis, for service. The behavior of the Internal Diagnostic Tool can be the same as of an External Diagnostic Tool. The notion of “Internal Diagnostic Tool“ does not imply that it is included in each ECU as an AUTOSAR Software-Component.
Physical Addressing	The diagnostic communication model where a node of a specific communication network receives a message from one sending node (1-1 communication). This model is also referred

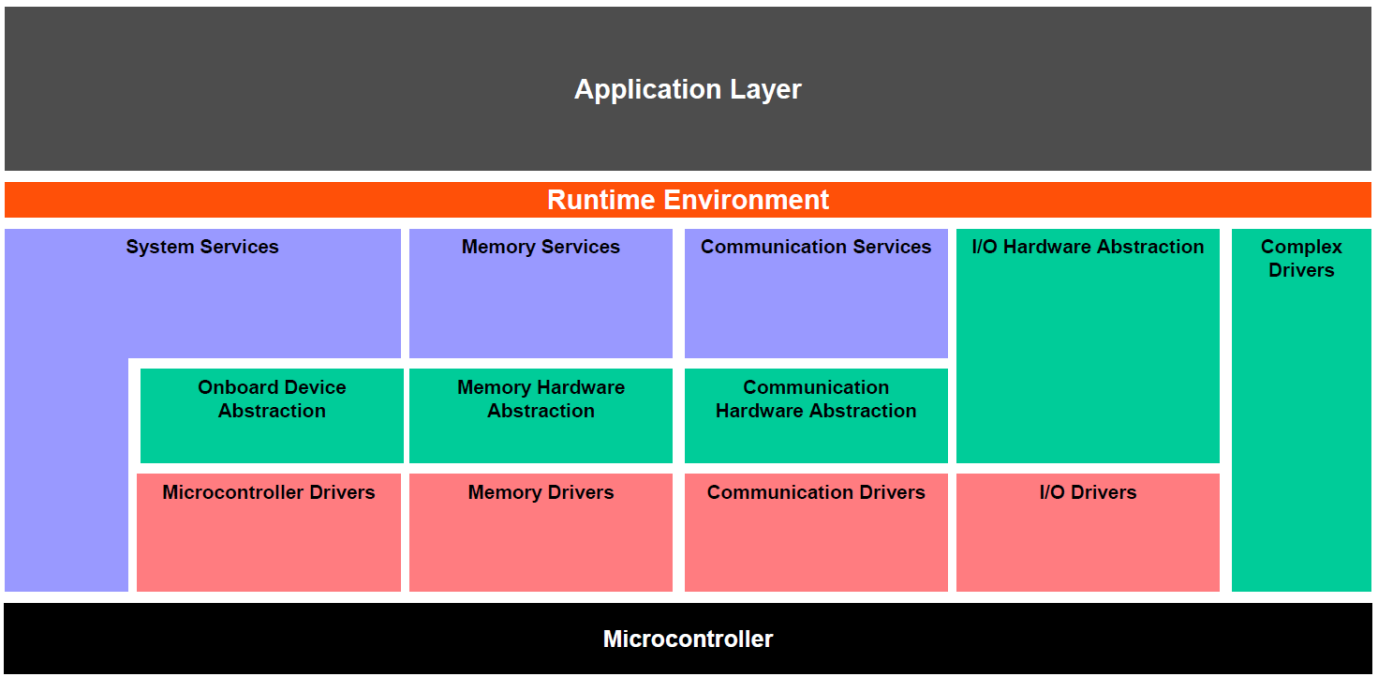
	to as ‘unicast’.
UDS Service	This refers to a UDS Service as defined in ISO14229-1
Callouts	Callouts are pieces of code that have to be added to the DCM during ECU integration. The content of most callouts is hand-written code, for some callouts the DCM configuration tool shall generate a default implementation that is manually edited by the integrator. Conceptually, these callouts belong to the ECU Firmware.

Abbreviation:	*Description:*
API	Application Programming Interface
BSW	Basic Software
CRC	Cyclic Redundancy Check
Dcm	Diagnostic Communication Manager
Dem	Diagnostic Event Manager
Det	Development Error Tracer
DID	Data Identifier
DTC	Diagnostic Trouble Code
ECU	Electronic Control Unit
EcuM	Electronic Control Unit Manager
ISO	International Standardization Organization
IUMPR	In Use Monitoring Performance Ratio
OBD	Onboard Diagnostics
OEM	Original Equipment Manufacturer (Automotive Manufacturer)
OS	Operating System
PID	Parameter Identification
RTE	Runtime Environment
SSCP	synchronous server call point
SW	Software
SW-C	Software Component
UDS	Unified Diagnostic Services
DDDID	Dynamically Defined Data IDentifier

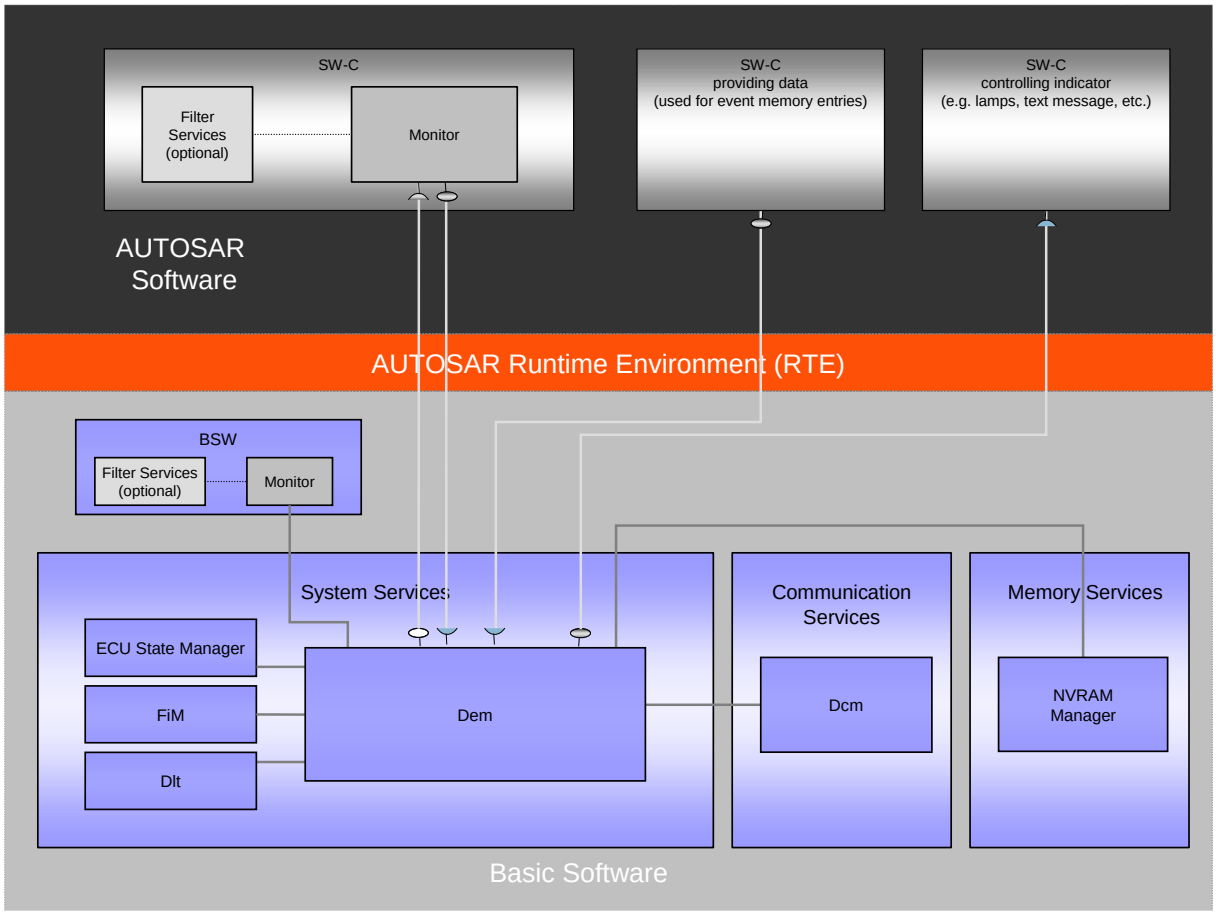
5 AUTOSAR System

5.1 Overview of Software Layers

AUTOSAR 플랫폼의 Layered Architecture 는 아래와 같다. AUTOSAR 플랫폼은, Service Layer, ECU Abstraction Layer, Complex Device Drivers 및 Microcontroller Abstraction Layer 로 구분될 수 있다.



5.2 AUTOSAR Dcm Module



6 Product Release Notes

6.1 Overview

이 Chapter 에서는 현대오토에버 Dcm Products 에 대한 Release 관련 내용을 제공하는데 목적이 있으며, Dcm Release Version 에 대한 제한사항 및 특이사항을 기술하고 있다.

6.2 Scope of the release

이 문서에 대한 모든 내용은 다음의 현대오토에버 Dcm 모듈에 한정한다.

Module	Autosar version	SWS version	Module version
Dcm	4.0.3	4.2.0	2.14.0

6.3 Change Log

6.3.1 Version 2.14.0.0

- Feature
  - DcmDslDiagRespMaxNumRespPend 타입 변경

원인	Pending 응답을 20분 이상 (255회 이상) 유지시키기 위하여, RespMaxNumRespPend 값을 255 이상 설정할 수 있도록 타입 변경
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Feature
  - Security Attempt Counter 를 non-volatile value 로 관리하기 위한 기능 개발

원인	Security Attempt Counter는 non-volatile value로 관리되어야 함.
동작 영향	None
설정 영향	Dcm/DcmConfigSet/DcmDsp/DcmDspSecurity/ DcmDspSecurityMaxAttemptCounterReadoutTime Dcm/DcmConfigSet/DcmDsp/DcmDspSecurity/DcmDspSecurityRow/ DcmDspSecurityAttemptCounterEnabled Dcm/DcmConfigSet/DcmDsp/DcmDspSecurity/DcmDspSecurityRow/

	DcmDspSecurityGetAttemptCounterFnc Dcm/DcmConfigSet/DcmDsp/DcmDspSecurity/DcmDspSecurityRow/ DcmDspSecuritySetAttemptCounterFnc
ASW 조치 사항	Security Attempt Counter를 non-volatile memory에 read/write 동작은 application의 Xxx_GetSecurityAttemptCounter()/Xxx_SetSecurityAttemptCounter()에서 수행되어야 함

- Bug
  - DCM_STANDARD_SUPPORT = DCM_ES95486_SUPPORT or DCM_ES95486_02_SUPPORT or DCM_ES95486_50_SUPPORT or DCM_ISO14229_SUPPORT 인 경우,
    Security Attempt Counter 가 Security Level 별로 존재하지 않는 문제를 수정

원인	모든 Security Level이 공통으로 하나의 Security Attempt Counter 변수를 사용함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Bug
  - Security Attempt Counter가 0으로 초기화되는 시점을
    Security Delay Timer 시작 시점에서 Security Delay Timer 만료 이후로 수정

원인	Security Delay Timer 시작 시에 Security Attempt Counter를 0으로 초기화함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Bug
  - DcmDslSubService에 설정되었고 DcmDspSecurityRow에는 설정되지 않은
    Security Level에 대한 Security Access RequestSeed 요청 시,
    NRC 0x31로 응답하지 않고 NRC 0x12로 응답하도록 수정

원인	NRC 오류
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Security Delay Timer 만료 이후, Security Access SendKey 요청 시 긍정응답하지 않고 NRC 0x24 로 부정응답하도록 수정

원인	DCM_STANDARD_SUPPORT = {DCM_ES95486_SUPPORT / DCM_ES95486_02_SUPPORT / DCM_ES95486_50_SUPPORT / DCM_ISO14229_SUPPORT}인 경우, Security Delay Timer 시작 시, Security Access sequence를 저장하는 변수를 초기화하지 않음.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 의도치 않은 Authentication 인증 해제

원인	특정 조건에서의 Authentication timer 및 P2,P3 timer 간 상태 천이가 고려되지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 유효하지 않은 인증서로 Authentication 서비스 사용시, NRC 0x00 발생

원인	유효하지 않은 인증서를 이용하여 인증 서비스 (29 01)이 2회 연속 요청되면, NRC 값이 정의되어 있지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ RequestDonwload, TransferData 요청 후, RequestFileTransfer, Transfer Data 요청 시 의도하지 않은 NRC 에러 발생

원인	Request Download, RequestFileTransfer 서비스 간 변수 초기화조건이 고려되지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.2 Version 2.13.0.0_HF1

- Bug
  - 의도치 않은 Authentication 인증 해제

원인	특정 조건에서의 Authentication timer 및 P2,P3 timer 간 상태 천이가 고려되지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Bug
  - 유효하지 않은 인증서로 Authentication 서비스 사용시, NRC 0x00 발생

원인	유효하지 않은 인증서를 이용하여 인증 서비스 (29 01)이 2회 연속 요청되면, NRC 값이 정의되어 있지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Bug
  - RequestDonwload, TransferData 요청 후, RequestFileTransfer, Transfer Data 요청 시 의도하지 않은 NRC 에러 발생

원인	Request Download, RequestFileTransfer 서비스 간 변수 초기화조건이 고려되지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.3 Version 2.13.1.0

- Improvement
  - 600 개 이상의 DID 항목이 존재하는 상황에서의 Dcm generation 시간 과다 소요 현상 추가 개선

원인	DID에 해당하는 Signal 검색과 Signal 정렬을 중복 수행하여 DID 와 Signal 이 600 개 이상의 경우 30분 이상 소요
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ 어플리케이션에서 획득한 C-SAC(0x21) 레벨이 부트로더에서 유지되지 않는 문제 개선

원인	부트로더 진입 후에, C-SAC 레벨에 해당하는 인덱스 변수를 지정하지 않고 초기화 인덱스를 이용하여 보안 레벨을 설정
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 가변길이 데이터를 사용하는 DID 에 대하여 최대 길이보다 짧은 데이터로 2E 서비스 요청 시, NRC 13 발생하는 문제 개선

원인	데이터 길이를 확인하는 로직에서 최대 값보다 짧은 길이의 데이터를 수신하는 경우를 포함하지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 매크로 DCM_CNR_USED_SHA1 설정을 바꾸어도 생성 결과가 변하지 않는 현상 개선

원인	매크로 생성 규칙에서 사용하는 이름과 설정 템플릿에서 사용하는 이름이 서로 다름
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 서비스 처리 중에 우선순위가 더 높은 프로토콜의 메시지 수신 시, 이후 메시지 수신 불가 (통신 모듈 NOT_OK 리턴) 현상 개선

원인	직전 요청이 수행중인 상태에서 더 높은 프로토콜로 메시지를 받은 경우, 이 메시지에 대한 수신 처리가 완료되지 않아서, 이후에 들어오는 같거나 우선순위가 더 낮은 메시

	지를 수신하지 못함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Nvm 모듈의 의존성 제거 누락으로 Light platform 에서 DID 서비스 사용 시의 컴파일 에러 개선

원인	Nvm 모듈 헤더가 포함되지 않도록 매크로 설정한 이후에도, Nvm 관련 타입 또는 함수를 사용하는 의존성 존재. Nvm 모듈이 없는 Light Platform에서 DID 사용 시 컴파일 에러가 발생함
동작 영향	None
설정 영향	DcmGeneral / NvmIntegrated 항목 추가
ASW 조치 사항	None

➢ Bug

■ 부트로더 점프 후, Functional 요청 메시지에 대하여 NOT_OK 리턴 현상 개선

원인	부트로더 점프 후 응답이 필요하지 않은 상태에서, 최초 요청 메시지를 확인하는 플래그를 FALSE 로 세팅하나 사용하는 프로토콜의 PduId를 저장하지 않음. 이후의 요청 메시지의 PduID 가 저장된 Id와 불일치하므로 NOT_OK 리턴.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 세션 유지 타이머의 변수와 플래그 설정 사이에 임의 딜레이 추가하여 Race condition 개선

원인	멀티코어 환경에서 Dcm 태스크를 분산하여 실행할 때, 타이머 변수의 경쟁 상태(Race condition)으로 인하여 타이머의 시간 초과 전에 Default session으로 천이됨. 타이머와 변수의 설정 순서를 변경하였으나 어셈블리 단계에서 경쟁 상태 여전히 존재함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.4 Version 2.9.0.0_HF2

➢ Bug

■ 세션 유지 타이머의 변수와 플래그의 Race condition 개선

원인	멀티코어 환경에서 Dcm 태스크를 분산하여 실행할 때, 타이머 변수의 경쟁 상태 (Race condition)으로 인하여 타이머의 시간 초과 전에 Default session으로 천이 됨. 타이머와 변수의 설정 순서를 변경하였으나 어셈블리 단계에서 경쟁 상태 여전히 존재함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.5 Version 2.13.0.0

➢ Bug

■ Authentication (0x29) 서비스를 잘못된 데이터 길이로 요청하는 경우, NRC 응답이 올바르지 않음

원인	요청 메시지의 길이를 확인하는 로직 순서가 올바르지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ RoutineControl (0x31) 서비스에 대한 NRC 응답 순서가 올바르지 않음

원인	Routine Control 요청 시, NRC 13 (incorrectMessageLengthOrInvalidFormat) 발생이 어플리케이션 계층을 지난 이후에 발생
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ SecurityAccess(0x27) 서비스를 Extended session(10 03)에 이어서 요청하는 경우, 세 번 이상 시도할 때에도 NRC 36 (ExceededNumberOfAttempts)이 아닌 NRC 35(InvalidKey) 발생

원인	Extended session을 재 초기화하는 과정에서 Attempt counter 변수를 초기화하여 시도 횟수가 3회 미만으로 설정됨
동작 영향	None

설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ 리프로그래밍 이후의 EcuReset(11 01) 무응답에 대한 개선

원인	리프로그래밍 후, ApplUpdated 값은 TRUE 로 설정되면, 함수 Dcm_Internal_SetProgConditions() 로직에 의하여 WARM_START 시작. 이 후, Dcm_Internal_GblFirstCallToMain() 에서 ResponseRequired 값이 1이 아님에 따라 함수 내부 로직을 따라 응답하지 않고 Programming session 으로 세션을 천이하여 정상 응답이 발생하지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ 메세지 송수신 함수에서의 문제 발생 시, 원인 파악을 용이하게 하기 위하여 DET 코드를 추가

원인	None
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ ES95486-50 조건에서 Security level delay time, Num Att Delay 를 180/3 에서 변경할 수 없음

원인	ES95486-50 조건에서 Security level delay time, Num Att Delay 변경할 수 없도록 설계
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ 600 개 이상의 DID 항목이 존재하는 상황에서의 Dcm generation 시간 과다 소요

원인	SW component를 generate 할 때 비효율적인 sorting logic 사용
동작 영향	None
설정 영향	None

ASW 조치 사항	None

6.3.6 Version 2.12.0.0_HF1

- Bug
  - WDBI(WriteDataByIdentifier) NRC 로직 순서가 잘못됨

원인	WDBI의 NRC 응답 0x13, 0x31의 순서가 뒤바뀜
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Bug
  - 보안 액세스 서비스 ASK/OEUK 를 혼합하여 사용하는 경우 NRC 24 미발생

원인	Security Access Level이 다른 Challenge 시도가 이전에 획득한 Request seed 권한을 취소시키지 못함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.7 Version 2.12.0.0

- Bug
  - DCM_SECURE_FLASH_SUPPORT 값이 항상 OFF 로 생성됨

원인	DCM_SECURE_FLASH_SUPPORT 옵션 생성 시 규칙 오류
동작 영향	None
설정 영향	DcmGeneral/DcmTransferSignatureNotWriteFlash
ASW 조치 사항	None

- Feature
  - RequestFileTransfer 서비스 사용 시 ResumeFile(0x06) 지원

원인	ISO 사양에 근거하여 RequestFileTransfer 서비스 사용 시 ResumeFile(0x06) 지원
동작 영향	None
설정 영향	None

ASW 조치 사항	None

➢ Feature

■ RoutineControl 사용 시 AuthenticationRole 동작하도록 로직 개발

원인	RoutineControl 사용 시 AuthenticationRole 동작하도록 로직 개발
동작 영향	None
설정 영향	DcmDspRoutineInfo/DcmDspRoutineRequestResOut/DcmDspRoutineRequestResOutSignal DcmDspRoutineInfo/DcmDspStartRoutineOut/DcmDspStartRoutineOutSignal DcmDspRoutineInfo/DcmDspRoutineStopOut/DcmDspRoutineStopOutSignal
ASW 조치 사항	None

6.3.8 Version 2.11.1.0

➢ Bug

■ Routine Control 의 Input / Out Signal 전달 시 Order 역전 및 누락 발생(2.11.0.0_HF1 적용)

원인	Endian (Little, Big) 처리에 대한 로직 오류로 RoutineControl Signal 데이타 2byte 타입 이상으로 선언 후 Signal 전달 시 (Input, Output) Oder 역전 및 누락 발생.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ 0x29 서비스의 01 subservice 시 의도치 않은 Pending 메시지 반복

원인	TpTxConfirmation 확인 여부와 관계없이 Pending 후 Callback Fucntion이 호출되어 동작.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Dcm_DcmTransferData 처리 중 의도치 않은 NRC 발생

원인	TrasnferData 전달 시 Block Sequence Counter 0xFF가 2번 전달되는 경우 의도치 않는 Sequence error 발생
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Authentication Service(29 01) 동작 시, NRC 0x00 발생

원인	인증 서비스 (29 01)이 2회 연속 요청 되면, NRC 값이 정의되어 있지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Programming Session 응답 시, P2*Server max time 값의 resolution 미적용

원인	App에서 요청할 경우, P2*ServerMax의 Resolution이 적용 안 됨
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.9 Version 2.11.0.0_HF1

➢ Bug

■ Routine Control 의 Input / Out Signal 전달 시 Order 역전 및 누락 발생

원인	Endian (Little, Big) 처리에 대한 로직 오류로 RoutineControl Signal 데이타 2byte 타입 이상으로 선언 후 Signal 전달 시 (Input, Output) Oder 역전 및 누락 발생.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.10 Version 2.11.0.0

➢ Feature

■ Crypto R44 사용 시 CSAC SHA1 로직 지원

원인	R40 플랫폼에서는 SHA1 알고리즘에서 0으로 Seed Padding 로직을 Csm에서 제공하였으나, R44 플랫폼에서는 제공하지 않음. 따라서 Dcm에서 Callout으로 이를 구현.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ DiagnosticSessionControl($10 02) 요청에 대한 Jump to bootloader 로직 개발 (FBL 3.0)

원인	FBL 3.0에서 DiangosticSessionControl(10 02) 요청 시, FBL로 jump 이후 무응답 상태로 머물렀음. 따라서, WARM_START 및 설정에 따라 긍정응답 혹은 무응답 하도록 기능개발.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Transferdata 사용 시 NRC 발생

원인	ReqDataLength는 blockSequenceCounter가 포함된 값이므로, Blocklength와 비교 시 1을 빼주어야 함.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ RequestFileTransfer 서비스 미사용 시 uint64 error 미발생하도록 개선

원인	변수 타입 uint64는 RequestFileTransfer 사용 시에만 필요하므로, 해당 서비스 미사용 시 uint64 변수 error 미발생하도록 개선.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.11 Version 2.10.1.0

➢ Bug

■ DID Range 명령 길이 유효성 판단 로직 수정

원인	WriteDataByIdentifier (2E) 서비스로 DID Range 의 Data Write 요청 시 Length 확인 실패 (0x13 NRC). DID Range 의 설정값 참고 로직 수정.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ shortTermAdjustment(0x03) 명령 길이 유효성 판단 로직 개선

원인	InputOutputControl(2F) 서비스의 shortTermAdjustment(0x03) 명령에 대한 controlState 최소 길이가 설정값으로 판단하지 않고 무시 되도록 개선 요청되어 반영
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Task

■ Request Download/Upload 관련 User Manual 에 안내 문구 추가

원인	RequestDownload, RequestUpload 의 경우 memory address 에 대한 range 체크 필요 시 각각 호출되는 User Callout 에 유저가 직접 구현해야함 문구 추가
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.12 Version 2.10.0.0

➢ Feature

■ RequestFileTransfer Service 추가

원인	ES 사양 개정에 따라 RequestFileTransfer Service 개발
동작 영향	None
설정 영향	DcmConfigSet/DcmDsp/DcmDspRequestFileTransfer
ASW 조치 사항	Port 사용 시 RequestFileTransfer PPort 설정 필요

6.3.13 Version 2.9.0.0_HF1

➢ Bug

■ 타이머 race condition 에 의한 시간 초과 이전의 세션 천이 현상 개선

원인	멀티코어 환경에서 Dcm 태스크를 분산하여 실행할 때, 타이머 변수의 경쟁 상태 (Race condition)으로 인하여 타이머의 시간 초과 전에 Default session으로 천이 됨. 이후 Extended session 조건의 서비스 요청에 NRC 7F 발생
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.14 Version 2.9.0.0

➢ Bug

■ Security Access 동작 개선

원인	Security Access 진행 시 Seed 전송 후 Key 인증 단계에서 Invalid Key 판단 시 Key 인증 단계에 있지 않고 초기 Seed 전송 단계로 State 초기화되지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ InputOutputControlByIdentifier (2F) Status 처리 로직 추가

원인	Async 방식으로 InputOutputControlByIdentifier (2F) 동작 시 Condition check, Read Data 의 상태가 초기 부터 Pending 으로 요청됨. App 함수 호출 시 Init 에 대한 처리가 불가능
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ RoutineControl RequestResults (31)(03) 요청 후 Negative 발생 시 Status 처리 로직 개선

원인	RoutineControl RequestResults (31)(03) 요청 후 Negative 발생 시 Status 초기화 안됨

동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Routine Control Signal 의 최소 길이 처리 필터 로직 추가

원인	Routine Signal 의 설정 길이보다 작게 보내는 경우 Overflow 발생하여 Reset 발생
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ FBL Progconditions 설정 의존성 제거

원인	FBL과 RTSW 에서 공유하는 Progconditions 의 Connection 이 FBL 버전에 따라 다름. 사용하는 FBL 에 맞춰 사용자가 선택 가능하도록 요구됨. Connection 사용에 대한 의존성을 User 가 선택할 수 있도록 설정 추가됨. (FBL 타입 선택 설정 필요함)
동작 영향	None
설정 영향	Dcm / DcmConfigSet / DcmGeneral / Fbl Used Type
ASW 조치 사항	None

6.3.15 Version 2.8.0.0

➢ Feature

■ Authentication NRC(5A/5D) Callout 추가

원인	Authentication NRC 5A/5C를 위한 Callout 함수 추가.
동작 영향	None
설정 영향	DsmDspAuthentication/DcmDspAuthenticationConnectionES/ DsmDspAuthenticationSettingAccessRightsFailedFunc DsmDspAuthenticationDeauthenticationFailedFunc DsmDspAuthenticationUsePort
ASW 조치 사항	Authentication 서비스와 함께 NRC 5A/5D 사용 시 Callout Function 추가 필요.

➢ Improvement

■ Authentication default role 수정

원인	Authentication Service 사용 시 role을 설정하지 않았을 경우 0x00으로 생성되어 NRC 34 (authenticationRequired) 부정 응답이 발생함. role을 설정하지 않았을 때 0xFF로 생성되도록 제너레이터 수정.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ CSAC/Authentication precompile option 분리

원인	CSAC 설정 없이 Authentication Service가 동작하도록, Authentication Service과 CSAC precompile 옵션 분리.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ Secure Flash Support 이름 수정

원인	DcmSecureFlashSupport 옵션의 이름이 오해의 소지가 있으므로, DcmTransferSignatureNotWriteFlash로 명칭 변경.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ $19 $1A 서비스에서 정상 응답해야 하는 상황에서 NRC 0x31 표출하는 현상이 발생하여 수정함

원인	$19 $1A 서비스 수신 시에는 FunctionalGroupIdentifier와 DTCFormatIdentifier를 체크하지 않아야 하는데 체크하는 로직이 있어서 오류 발생
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ $19 $42 서비스에서 DTC 가 표출되지 않아야 하는 상황에서 DTC 가 표출되어 수정함

원인	$19 $42 서비스 수신 시 Dem_SetDTCFileter의 인자로 잘못된 값이 입력되어 오류

	발생
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.16 Version 2.7.1.0

- Feature
  - Authentication Service (NRC 58)

원인	Authentication 서비스에서 ProofOfOwnership 실패 시 NRC 58 (Ownership verification failed) 응답
동작 영향	None
설정 영향	None
ASW 조치 사항	None

- Task
  - Minor Version 값 수정

원인	Dcm Minor Version 수정
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ 신규 NRC 추가

원인	ES95486-02 rev.19 개정에 따라 추가된 NRC 중 NRC 만 제공하는 항목(APP 구현) 추가
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Dcm 2.7.0.0 버전 Dem 3.4.0.0 의존성 제거

원인	Dcm 2.7.0.0 버전 사용 시 Dem 3.4.0.0 의존성이 발생하므로, J1979-2 사용하지 않을 경우 의존성 제거
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.17 Version 2.7.0.0

➢ Feature

■ Secure Access SHA2 대응

원인	서명 및 C&R 검증 시 SHA2로도 검증 요청
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Authentication Service (Vendor Specific)

원인	Authentication 서비스 사용 시 ES 사양에서 요구하는 인증서를 처리할 수 있도록 Vendor Specific 로직 개발 요청
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ J1979-2 사양 개발

원인	J1979-2 사양 개발 요청
동작 영향	None
설정 영향	/AUTRON/Dcm/DcmConfigSet/DcmGeneral/DcmObdProtocolId (refer 7.1.1) /AUTRON/Dcm/DcmConfigSet/DcmDsp/DcmDspReadDTCInformation/

	DcmDspReadDTCInformationSupportedObdUdsDtcSeparation (refer 7.1.5.21)
ASW 조치 사항	None

■ J1979 사양 개발

원인	J1979 사양 개발 요청
동작 영향	None
설정 영향	/AUTRON/Dcm/DcmConfigSet/DcmDsp/DcmDspPid (refer 7.1.5.10) /AUTRON/Dcm/DcmConfigSet/DcmDsp/DcmDspRequestControl(refer 7.1.5.11) /AUTRON/Dcm/DcmConfigSet/DcmDsp/DcmDspTestResultByObdmid(refer 7.1.5.17) /AUTRON/Dcm/DcmConfigSet/DcmDsp/DcmDspVehInfo (refer 7.1.5.18)
ASW 조치 사항	None

6.3.18 Version 2.6.5.0

➢ Bug

■ 높은 순위 프로토콜(Client B)이 낮은순위 프로토콜(Client A)을 선점하였을때 높은순위 프로토콜(Client B)의 진단 동작이 정상 동작하도록 변경

원인	높은순위 프로토콜(Client B)의 진단 Request 수신후 Request의 수신상태가 수신중으로 계속 유지되어 다음 Request를 처리하지 못함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Task

■ DcmDslDiagRespOnSecondDeclinedRequest 설정 미지원으로 변경

원인	DcmDslDiagRespOnSecondDeclinedRequest 설정 미지원
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.19 Version 2.6.4.0

➢ Bug

■ WriteDataByIdentifier 서비스에서 Minimum length Check 로직 오류 수정

원인	WriteDataByIdentifier 서비스에서 Minimum length Check 로직에 오류 존재

동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Read dtc 서비스 수행시 Security access 의 Sequence 를 체크하는 변수가 초기화 되지 않도록 수정

원인	read dtc 서비스 수행시 security access의 sequence를 체크하는 변수가 초기화 됨
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Bug

■ Programming session 에 따라 Reset 후 FBL 관련 flag Set 되도록 변경

원인	Programming session 에 따라 Reset 후 FBL 관련 flag가 Set 되지 않아 천이되지 않음
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.20 Version 2.6.3.0

■ Feauture

■ SID 와 subfunction 에 대한 white list 로직 수정.

원인	Dsd submodule의 검증을 위해 white list data structure를 수정하고 새로운 로직을 추가.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.21 Version 2.6.1.0

➢ Improvement

■ FBL3.0 대응으로 Programming Session 요청으로 리셋 이후에 세션 유지하고 긍정 응답 하도록 변경.

원인	FBL 3.0 미대응

동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ Dem 이 없어도 컴파일 에러 나지 않도록 개선

원인	Dem과의 연관성 존재
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ Requestdownload 시 4byte 로 고정되어 긍정 응답하는 부분 개선.

원인	Requestdownload시 4바이트로 고정되어 응답함
동작 영향	None
설정 영향	None
ASW 조치 사항	None

➢ Improvement

■ 제너레이터 pdf 파일에서의 '>' 누락 개선.

원인	제너레이터 pdf 파일에서의 '>' 누락
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.22 Version 2.6.0.1

■ Task

■ User Manual 수정

원인	영문 매뉴얼 추가 RXSWIN사용시 Rxbuffersize 셋팅 가이드 추가
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.23 Version 2.6.0.0

■ Feature

■ Add Authentication Service

원인	Add Authentication Service for Dcm R40
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.24 Version 2.5.2.0

■ Improvement

■ Fix UNECE

원인	Fix UNECE
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Improvement

■ Update the static code with Autosar Dcm version R4.3. When default session transition, Communication control state and Control DTC state must be reset.

원인	In Dcm R40, when Dcm transit to default session, communication control state and control DTC state is not reset because Autosar R4.0 spec there's no clear expression about it. So Dcm need to be applied Autosar Dcm version R4.3 to make sure the Communication control state and control DTC state must be reset when Dcm transit to default session.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.25 Version 2.5.1.0

■ BUG

■ Update generator to add validation for DcmDslBufferSize base on specifications standard support.

원인	PduLengthType is only supported as uint16, DcmDslBufferSize can be set up to a maximum of 65535. In the case of ES specification support, the max value can be set up to 4095.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Improvement

■ Fix UNECE

원인	Fix UNECE
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.26 Version 2.5.0.0

■ Feature

■ Change cause of occurrence in 0x22 service

원인	In service 0x22 ReadDataByIdentifier, change logic return of NRC 0x13 and NRC 0x31 from ES document version REV16 to version REV17/21.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Improvement

■ Verify return NRC 0x72, when CheckProgrammingDependancy failed.

원인	In previous version, there is no test case when CheckProgrammingDependancy failed. So add new test case to verify this condition.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Feature

■ Update source code of service 0x22 ReadDataByIdentifier to support Read Data Length function return pending.

원인	In previous version, Read Data Length function of service 0x22 only return E_OK. Currently Read Data Length function can be returned pending. So source code need support Read Data Length function return pending.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Improvement

■ Verify critical section pair for UT

원인	Improvement source code for detecting missing exit protection after enter protection.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

■ Improvement

■ Improvement generator when same input, the code order of generated output files should be same.

원인	In previous version, the code order of generated output files is different when using the same input files. Improvement generator to make sure the generated output file should be same when same input file.
동작 영향	None
설정 영향	None
ASW 조치 사항	None

6.3.27 Version 2.4.0.0

■ Feature

■ CAN/CAN FD RX Buffer 길이를 최대 4095 까지 설정할 수 있도록 개발. 초과 설정 시 Generate 에러 발생

원인	〈요구사항〉 : First frame data length가 4095byte를 초과하는 경우 메시지 수신을 중단하고 'overflow' FC를 전송하도록 개발. 〈ES 사양〉 : ES95486-12 4095byte를 초과하는 FF_DL 수신 시 'overflow' FC를 송신해야 하는 TC 존재 : ES95486-00,02,50 FF_DL의 최대값을 4095byte로 정의. 〈ISO사양〉 : ISO 15765-2 FF_DL이 available buffer size를 초과할 경우 메시지 수신을 중단하고 'overflow' FC를 전송.
동작 영향	없음
설정 영향	Dcm/DcmConfigSet/DcmDsl/DcmBuffer/UDS_RX CAN RX Buffer 길이를 4095 초과 설정 시 Generate 에러 발생
ASW 조치 사항	없음

■ Bug

■ Secure Access 수행 시 Request Seed 전에 Send Key 를 할 경우 잘못된 NRC 응답

원인	Request seed 이전에 send Key가 수행될 경우 내부 로직 오류로 인해 NRC 0x24(requestSequenceError)가 아닌 다른 NRC(0x13 Invalid Length)로 응답
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Improvement

■ Dcm_GetCertificationInfo API 관련 설명 보강 및 불필요 API 삭제

원인	버전 2.3.18.0을 통해 제공된 Certifcate Holder Reference는 기존에 존재하는 Dcm_GetCertificationInfo API통해 제공되므로 Dcm_GetCertHolderReferece API는 삭제됨.
동작 영향	없음
설정 영향	DcmServices 에 GetCertHolderReference operation 삭제됨
ASW 조치 사항	GetCertHolderReference API 사용한 경우 Dcm_GetCertificationInfo API 로 변경 필요 UM 에 Dcm_GetCertificationInfo API 설명 보강

■ Improvement

■ Library code 오픈으로 fixed 항목 changeable 로 수정

원인	코드 오픈으로 user가 직접 수정 가능한 항목 변경할 수 있도록 변경
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Improvement

■ ES 사양의 mandatory 값과 다른 값으로 설정시 error 메시지 출력

원인	ES 95486 support 일 경우 access lock time 180, num att delay 3이외의 값 설정시 generator에서 error 발생시키도록 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.28 Version 2.3.18.0

■ Bug

■ SecureAccess 2.0 사용시 Certifcate Holder Reference 를 application 에 API 통해 제공 필요

원인	ES95489-01의 5.4.2 SELF LOCK ACTIVATION REQUEST의 SWP은 SecureAccess 2.0 사용시 Certifcate Holder Reference정보를 제공해야 함
동작 영향	없음
설정 영향	DcmServices 에 GetCertHolderReference operation 추가됨.
ASW 조치 사항	UM 11.1.2.1.1 참고하여 API 사용 필요

■ Improvement

■ Secure access 시 오토에버 FBL 의존성 제거

원인	오토에버 FBL 미사용시에는 public key를 Dcm에서 받아 SecureAccess인증 가능하도록 개선(기존에는 public key를 user callout 내에서 직접 구현 필요)
동작 영향	없음
설정 영향	없음
ASW 조치 사항	오토에버 FBL 미사용 및 현대차 Secure access 사양 적용시 Dcm_GetPublicKey 구현 불필요하도록 개선됨.

6.3.29 Version 2.3.17.0

■ Improvement

■ Dcm Library 영향성 제거(Library 코드 오픈)

원인	Dcm Library 영향성 제거(Library 코드 오픈)
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Bug

■ Multiple protocol 사용시 S3 timer reload 되지 않는 현상 개선

원인	Multiple Protocol 사용시 S3 timer reload 되지 않음.(사양 불만족)
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.30 Version 2.3.16.0

■ Improvement

■ Improvement of coding convention for Cyber-Security

원인	UNECE Cyber Security 법규 대응을 위한 보안 코딩 개선
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.31 Version 2.3.15.0

■ 개선 사항

■ UM 수정

원인	• Autoever HSM 2.0 사용하여 True random generate 사용시 주의사항 추가 (11.2.2.1.2 챕터 참고) • 8.3.13 OpStastus Pending관련 설명 추가 • AppDcm_GetRandomSeed 함수 설명 주석 추가
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ 개선 사항

■ Dcm_DspRandomSeed()내에 지역변수가 함수의 파라미터로 전달되는 내용 수정 (security access 1.0 지원 가능하도록 수정)

원인	DCM_SECURITY_CRL_ENABLE 설정이 STD_OFF 일 경우 compile 오류 발생 (security access 1.0 사용일 경우 compile 오류 발생)
동작 영향	Compile 오류 수정
설정 영향	없음
ASW 조치 사항	없음

■ 개선 사항

■ Memory section 지정 오류 수정

원인	일부 Dcm 내 변수에 대해서 memory section 미지정 및 memory section 오지정(Const Data -> variable Data section 으로 지정) 오류 수정
동작 영향	없음

설정 영향	없음
ASW 조치 사항	없음

6.3.32 Version 2.3.14.0

■ 개선 사항

■ Dcm_DspRandomSeed()내에 지역변수가 함수의 파라미터로 전달되는 내용 수정

원인	Dcm_DspRandomSeed() 함수 내에서 Csm_RandomSeedUpdate 함수 호출시 지역변수를 매개변수로 전달
동작 영향	CsmRandomSeedUpdate()함수가 Async 로 동작할 경우 RAM 손상 문제 발생하지 않도록 조치 현재는 Sync 로 동작하도록 배포되고 있으므로 영향 없음
설정 영향	없음
ASW 조치 사항	없음

■ 개선 사항

■ ES 사양개정에 따른 Security Access lock time 변경

원인	ES 사양 개정
동작 영향	ES 사양 개정에따라 Security access service 에서 3 회 이상 login 실패시 180 초 lock 이 걸리도록 변경
설정 영향	없음
ASW 조치 사항	없음

■ 개선 사항

■ RoutineControl 시 start/stop/requestRoutineResults 진행시 Responsebyte 이상건 개선

원인	RoutineControl 시작시 variable length 가 초기화되지 않음
동작 영향	Sub function Start/Stop/requestRoutineResults 에서 signal 이 없는 Sub function 이 있고 variable length 로 설정된 sub function 이 있는 경우, Signal 이 없는 sub function 호출 이후 signal 이 없거나 signal type 이 fixed 인 sub function 진행시 sub function 의 responsebyte 가 variable length 로 설정된 signal 의 responsebyte 와 동일하게 출력 정상 Case1 :

Start in/out signal : fixed or variable length

Stop in/out signal : fixed or variable length

requestRoutineResults signal : fixed or variable length

정상 Case2 :

Start in/out signal : none or fixed

Stop in/out signal : none or fixed

requestRoutineResults signal : none or fixed

제한조건: 1),2) 동시에 만족할 경우 비정상 동작

1) signal이 없는 Sub function이 있을 경우

2) variable length로 설정된 sub function이 있을 경우

비정상 Case 1:

Start in or Start out signal: variable length

Stop in/out signal : none

requestRoutineResults signal : fixed

Start -> Stop(비정상응답) -> requestRoutineResults (비정상 응답)

비정상 Case 2:

Start in/out signal : none

Stop in/out signal : fixed

requestRoutineResults signal : variable length

Start -> Stop -> requestRoutineResults ->Start(비정상응답)->Stop(비정상응답)

비정상 Case 3:

Start in/out signal : fixed

Stop in/out signal : variable length

requestRoutineResults signal : none

	Start->Stop-> requestRoutineResults -> Start (비정상 응답)-> requestRoutineResults (비정상 응답) 비정상 Case4: Start in/out signal : none Stop in/out signal : none requestRoutineResults signal : variable length Start -> Stop -> requestRoutineResults -> Start (비정상응답)-> Stop (비정상응답)
설정 영향	없음
ASW 조치 사항	없음

6.3.33 Version 2.3.13.0

■ 개선 사항

■ DefaultSession 에서 Functional TesterPresent 수신시 S3Server Timer 동작

원인	ES95486-XX 사양 위반. S3Server Timer 는 Non-default 세션에서만 시작해야 하나 Default Session 에서 Functional TesterPresent(3E 80) 수신 시 동작함.
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.34 Version 2.3.12.0

■ 개선 사항

■ SecurityAccess 2.0 적용시 CSM API 인자에 지역변수를 하여 메모리 침범 현상 발생

원인	SecureAccess 2.0 사용시 CSM API 로 전달된 포인터가 Dcm 지역 변수(스택 메모리)로 전달되어 CSM Task 에서 메모리 복사를 하는 for 문의 loop 횟수로 사용됨. 이때 Context Switching 이 발생하면 포인터가 가리키는 스택 메모리 값이 변경되어 더 많은 loop 를 돌게 되어 메모리 복사 시 메모리 침범이 발생.

동작 영향	다른 모듈(또는 application)에서 사용 중인 메모리를 침범할 경우 제어기 오동작 발생
설정 영향	없음
ASW 조치 사항	없음

6.3.35 Version 2.3.11.1

■ 개선 사항

■ User Manual 수정

원인	Engine condition(Ex. Engine Stop, IGN On)에 따른 진단 서비스 제약 조건 관련 가이드 추가. 설정/샘플코드 추가로 Callback 에 대한 설명 보강
동작 영향	없음
설정 영향	없음
ASW 조치 사항	제어기 환경에 따라 Callback 함수를 적용한다.

6.3.36 Version 2.3.11.0

■ 개선 사항

■ 첫 Request 가 Functional TesterPresent(suppressPosRspMsgIndicationBit = true)일 때 짧은 간격으로 이어서 수신되는 Request 를 처리 못하는 현상

원인	ECU 리셋후 수신되는 첫 Request 를 일반적인 Request 로 처리하여 동시에 두개의 Request 를 처리하 못함.
동작 영향	Request 수신 전후에 Functional TesterPresent (suppressPosRspMsgIndicationBit = true) 수신 했을 경우, Request 를 무시하지 않고 정상적으로 처리함.
설정 영향	없음
ASW 조치 사항	없음

6.3.37 Version 2.3.10.0

■ 개선 사항

■ Concurrent Testerpresent 발생 시 MetaData 처리 오류

원인	Ethernet 진단 중 Concurrent Testerpresent 발생 시 이전 MetaData 를 유지하지 않고 Testerpresent 에 대한 MetaData 를 처리하여 Testerpresent 의 응답이

	나감에 따라 요청한 Request 에 대한 응답을 인식하지 못하는 현상. 이로 인해 Reprogramming 이 실패 할 수 있음. ※ Concurrent Testerpresent : Functional Address 로 TesterPresent request 가 요청될 때 SuppressPosRspMsgIndicationBit 가 TRUE 인(subfunction : 0x80) 경우
동작 영향	Request 를 처리중일 때 Concurrent TesterPresent Request 수신 했을 경우, TesterPresent 에 대한 MetaData 처리를 무시하고 요청한 Request 에 대한 응답 송신.
설정 영향	없음
ASW 조치 사항	없음

6.3.38 Version 2.3.9.0

■ 개선 사항

■ RoutineControl 시 Xxx_RequestResults 에서 Pending 요청 시 부정응답 현상

원인	Routine Control 의 RequestResults Subfunction 사용 할 때 User Callout 에서 DCM_E_PENDING 리턴 시 Pending 응답이 아닌 부정응답이 발생하며 E_FORCE_RCRRP 리턴 시 1 회 Pending 응답 후 부정응답 발생. 단, User Callout 에서 E_OK, E_NOT_OK, E_FORCE_RCRRP 를 리턴할 경우에는 정상동작.
동작 영향	User Callout 에서 DCM_E_PENDING 또는 E_FORCE_RCRRP 리턴 시 사양에 맞게 Pending 응답 하도록 수정.
설정 영향	없음
ASW 조치 사항	없음

6.3.39 Version 2.3.8.1

■ 개선 사항

■ User Manual 수정

원인	7.3.1.2 GetSesCtrlType 의 Parameter(Out)과 Description 에 기술된 'Masked by 0x80' 는 잘못된 표현이므로 삭제 처리
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ User Manual 수정

원인	Dcm 2.3.8.0 버전에서 반영된 난수생성 로직 변경항목과 연관된 AppDcm_GetSeed_L9() 구현 가이드에 변경 필요 사항 누락
동작 영향	HSM 적용 시, 난수생성 로직을 최초 1 회 TRNG 후 PRNG 로 동작하도록 변경
설정 영향	없음
ASW 조치 사항	HSM 적용 시, 난수생성 로직을 최초 1 회 TRNG 후 PRNG 로 동작하도록 변경하기 위해 10.2.2.1.2.1 과 10.2.2.1.2.2 의 AppDcm_GetSeed_L9() 참고하여 구현 필요

6.3.40 Version 2.3.8.0

■ 개선 사항

■ HSM 사용 시 SecureAccess CnR 난수생성 HSM_TRNG -> HSM_PRNG 변경

원인	HSM 적용 시, 난수생성 로직을 최초 1 회 TRNG 후 PRNG 로 동작하도록 변경
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Request Download overflow 체크 로직 추가

원인	Secure Flash Support 적용 된 경우, Client 로부터 Request Download Request 수신 시 Signatur 정보가 더해짐에 따라 memory size 값에 Overflow 발생가능
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Misra C 위반 항목 수정

원인	Misra C 위반 항목 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.41 Version 2.3.7.0

■ 개선 사항

■ OTA 백그라운드 전송 강건화를 위한 재전송 로직 개발

원인	백그라운드 전송 중 수행제어기가 Negative 응답을 하거나 응답이 없을경우 UDS

	Request 를 재전송 해야한다는 사양 변경에 따른 로직 개발
동작 영향	백그라운드 전송 중 동일 Block sequence number 로 수신 된 경우 OTA 사양에 따라서 처리한다.
설정 영향	없음
ASW 조치 사항	OTA Application 의 Dcm_WriteMemory 로직 변경 필요 동일 Block Sequence Number 로 TranferData 도착 시 Dcm_WriteMemory 를 호출하면서 Parameter 로 동일 Memory Address 를 전달하여 Application 에서 같은 Block Sequence Number 가 도착했는지 알 수 있으며 이것에 따른 로직 수행 필요함

6.3.42 Version 2.3.6.0

■ 개선 사항

■ Misra C 위반 항목 수정

원인	Misra C 위반 항목 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.43 Version 2.3.5.0

■ 개선 사항

■ Reentrant 와 Can be invoked Concurrently 설정 동기화

원인	Dcm_MainFunction Can be invoked Concurrently 설정 false 로 변경
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Compile warning 수정

원인	Compile warning 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Misra C Verification

원인	Misra C 정당화
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.44 Version 2.3.4.0

■ 개선 사항

■ Silent Com 상태에서 부정 응답 시 비정상 응답 메시지가 나오는 현상 수정

원인	Silent Com 상태에서 진단 메시지 수신 시 부정 응답의 경우 Full Com 전환이 안된 상태에서 부정 응답 처리 함수를 수행하게 되고 Silent com 에 대한 처리가 되어 있지 않았음
동작 영향	Silent Com 상태에서 수신된 진단 메시지에 대해 부정 응답 발생 시 Full Com 전환하여 정상적으로 부정응답 하도록 수정함
설정 영향	없음
ASW 조치 사항	없음

■ Dcm_ReadMemory 의 MemorySize 변경

원인	Autosar 사양에서 ReadMemory 의 Memory Address 와 Memory Size 가 uint32 로 정의되어 있으나 현재 플랫폼은 1 byte 로 가능하게 되어 있음
동작 영향	Autosar 사양에 맞게 4byte 로 수정함
설정 영향	없음
ASW 조치 사항	없음

■ DID 가 256 이상일때 outofRange 부정응답 현상 수정

원인	DID 가 256 이상일때 outofRange 부정응답 발생함. DID 의 Data Type 이 uint8 으로 생성됨.
동작 영향	생성되는 DID 의 Data Type 을 수정함
설정 영향	없음
ASW 조치 사항	없음

■ Misra C Mandatory 항목 수정

원인	Misra C Mandatory 항목 위반 사항 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.45 Version 2.3.3.0

■ 개선 사항

■ Misra C Verification

원인	Misra C 정당화
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.46 Version 2.3.2.1

■ 개선 사항

■ Concurrent Testerpresent 발생 시 MetaData 처리 오류

원인	Ethernet 진단 중 Concurrent Testerpresent 발생 시 이전 MetaData 를 유지하지 않고 Testerpresent 에 대한 MetaData 를 처리하여 Testerpresent 의 응답이 나감에 따라 요청한 Request 에 대한 응답을 인식하지 못하는 현상. 이로 인해 Reprogramming 이 실패 할 수 있음. ※ Concurrent Testerpresent : Functional Address 로 TesterPresent request 가 요청될 때 SuppressPosRspMsgIndicationBit 가 TRUE 인(subfunction : 0x80) 경우
동작 영향	Request 를 처리중일 때 Concurrent TesterPresent Request 수신 했을 경우, TesterPresent 에 대한 MetaData 처리를 무시하고 요청한 Request 에 대한 응답 송신.
설정 영향	없음
ASW 조치 사항	없음

6.3.47 Version 2.3.2.0

■ 개선 사항

■ TpTxConfirmation 의 result 가 NOT_OK 시 S3 timer 중지되는 동작 수정

원인	Dcm_TpTxConfirmation 의 notification result 가 NOT_OK 인 경우 S3 timer 가 중지되어 default session 으로 천이되는 문제 발생
동작 영향	Multi-frame 에서 FC 를 정상적으로 수신받지 못하는 경우 Dcm_TpTxConfirmation 의 notification result 가 NOT_OK 가 되고 이 경우에 S3

	timer 가 재시작된다.
설정 영향	없음
ASW 조치 사항	없음

6.3.48 Version 2.3.1.0

■ 개선 사항

■ **Concurrent TesterPresent 수신 오류**

원인	0x78 Pending Response 전송 후 수신되는 Concurrent TesterPresent Request 를 처리하지 못하여 문제 발생
동작 영향	Concurrent TesterPresent 오류 발생 시 Non-Default Session 에서 Default session 으로 천이되어 처리중인 request 가 취소됨
설정 영향	없음
ASW 조치 사항	없음

6.3.49 Version 2.3.0.0

■ 신규기능

■ **Dcm_GetVin() 기능 개발**

원인	DoIP 모듈의 Mandatory Interface 인 Dcm_GetVin 개발 요청에 의해 개발됨. 해당 부분의 4.1 스펙을 선적용하여 api 의 구현
동작 영향	없음
설정 영향	설정 추가 DcmVinRef [/AUTOSAR/Dcm/DcmConfigSet/DcmGeneral/DcmVinRef]
ASW 조치 사항	없음

■ **ECU Foreced Reset 기능 삭제**

원인	OTA 리프로그래밍 중 Ecu Reset 처리 기능 삭제 요청
동작 영향	없음
설정 영향	기존 설정 비활성화 Dcm/DcmConfigSet/DcmGeneral/DcmForcedEcuReset
ASW 조치 사항	없음

■ 개선사항

■ OTA 관련 설정 시 Dcm_GaaReadMemRngConfig 심볼 에러 발생

원인	TransferData service(0x36) 사용 시 ReadDatabyAddress service 가 설정되지 않으면 컴파일 에러 발생되어 수정함
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Secure Access 2.0 기능 관련 로직 수정

원인	Secure Access 2.0 기능 관련한 설정 수정 1. Secure Access 2.0 인지 구분 로직 변경 현재 request msg length 로 판단 => 설정의 ADR Size 로 판단으로 변경 2. 날짜 획득 로직 수정 현재 인증서 유효성을 판단하기 위한 날짜를 Application 에서 Nvm 에 날짜 정보 저장하여 Dcm 에서 읽어옴 => Port 연결하여 callback 함수로 읽어오도록 수정
동작 영향	없음
설정 영향	설정 추가 DcmDspCallbackPresentDate [/AUTOSAR/Dcm/DcmConfigSet/DcmDsp/DcmDspCallbackPresentDate]
ASW 조치 사항	없음

■ Secure Access 2.0 기능 중 CRL 발급자 공개키 식별자 검증 로직 수정

원인	**공개키 식별자 검증 시** Public key 의 exponent 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ OTA 사용 시 서명 블럭 수신 가능 하도록 수정

원인	Secure Flash Support 를 true 로 설정할 경우 request download 시에 요청한 memory size 외에 추가로 서명 블럭 수신 가능하도록 수정
동작 영향	없음
설정 영향	설정 추가 DcmSecureFlashSupport [/AUTOSAR/Dcm/DcmConfigSet/DcmSecureFlashSupport]
ASW 조치 사항	없음

6.3.50 Version 2.2.0.0

■ 신규기능

■ **Security Access 2.0 기능 개발**

원인	Security Access 2.0 기능 동작 지원
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ 개선사항

■ N/A

6.3.51 Version 2.1.1.0

■ 신규기능

■ **N/A**

■ 개선사항

■ 코드 공개를 위한 설정 항목 속성 재변경

원인	코드 공개를 위한 설정 항목 속성 변경
동작 영향	없음
설정 영향	DcmRespondAllRequest 속성을 FIXED 로 변경
ASW 조치 사항	없음

6.3.52 Version 2.1.0.0

■ 신규기능

■ **N/A**

■ 개선사항

■ 코드 공개를 위한 설정 항목 속성 변경

원인	코드 공개를 위한 설정 항목 속성 변경
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.53 Version 2.1.0

■ 신규기능

■ DcmDspDataBlockRef 설정 지원 개발

원인	Read/WriteDataByIdentifier(0x22/0x2E) service 사용 시 DcmDspDataBlockRef 를 이용해 DCM 에서 NVM Block 직접 접근하여 Data Read/Write 할 수 있도록 기능 추가
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ EthDiag 신규 기능 Meta Data 처리 기능 추가

원인	Ethernet 통신 시 EthDiag 신규 사양에서 필요한 정보인 Source Address, Target Address 를 Metadata 를 통하여 처리하도록 개발
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ 개선사항

■ N/A

6.3.54 Version 2.0.0

■ 신규기능

■ **OTA 개정 사양에 따른 ECU Reset 서비스의 우선 순위 처리**

원인	OTA 리프로그래밍 중 Server 의 치명적 동작 오류 발생 시 Reset 처리 가능해야 함
동작 영향	DcmForcedEcuReset check box 설정 시에 어떠한 서비스의 처리도중이라 하더라도 ECUReset(0x11 0x81) 요청이 오면 Server 는 Reset 이 가능하다.
설정 영향	1. 새로운 설정 추가 - Dcm/DcmConfigSet/DcmGeneral/DcmForcedEcuReset
ASW 조치 사항	없음

■ 개선사항

■ **Priority 가 다른 Protocol Preemption request 처리 시에 낮은 priority 를 가지는 protocol 의 선점이 안 되는 문제와 preemption timer 동작 문제**

원인	1. 여러 개의 Protocol 들이 다른 Priority 로 설정되어 선점 동작을 할 때 낮은 우선

	순위를 가지는 Protocol 의 선점이 안 되는 문제 2. 우선 순위가 높은 Protocol 의 선점 도중 그보다 더 높은 우선순위를 가진 요청처리 시 선점 타이머가 동작하지 않는 문제
동작 영향	Protocol 간 선점이 정상적으로 일어나도록 수정하고 Message 처리 조건 최적화
설정 영향	없음
ASW 조치 사항	없음

■ **연속된 TransferData(0x36) 서비스 요청 시 Memory 주소가 자동으로 update 안 되는 문제**

원인	RequestDownload 처리 후 이어지는 TransferData 서비스 요청 시에 blockSequenceCounter 에 따라서 MemoryAddress 도 증가되어야 하지만 같은 MemoryAddress 를 계속 호출하는 문제
동작 영향	blockSequenceCounter 에 따라 다음에 쓰여질 MemoryAddress 로 update 하도록 수정 함
설정 영향	없음
ASW 조치 사항	없음

■ **Multi-frame request message 수신 시 error 가 발생할 경우 S3Timer 을 재 시작 해주지 못하는 문제**

원인	Multi-frame request message 를 수신 중 Consecutive Frame 에서 error 가 발생할 경우 S3Timer 를 재 시작 해주지 못하는 문제
동작 영향	Multi-frame request message 를 수신 중 Consecutive Frame 에서 error 가 발생할 경우 S3Timer 를 재 시작하도록 수정
설정 영향	없음
ASW 조치 사항	없음

6.3.55 Version 1.9.5

■ 신규기능

■ N/A

■ 개선사항

■ **DID MAX Pending 처리 후 DID 의 OPSTATUS 값이 초기화 되지 않는 문제**

원인	개별 DID 의 OPSTATUS 값이 MAX PENDING 처리 후에는 DCM_OPSTATUS_INITIAL 로 변경이 안되어 발생

동작 영향	MAX PENDING 횟수 5 회 이후 $10 NRC 응답 직후 $2F DID 요청 시 서비스에 대한 동작 없이 긍정응답 하는 문제 수정
설정 영향	없음
ASW 조치 사항	없음

■ **기능 상에는 문제가 없으나, Generation 시 마다 ucPduIdStatusMask 값 변경되지 않도록 정렬**

원인	Generation 시 마다 ucPduIdStatusMask 이 정렬되지 않아서 값이 변경되었음
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ **QZN04 사양의 연속된 Seed Request 에 대해 Positive Response 와 함께 동일한 Seed Value 를 Return 하도록 수정**

원인	연속된 Seed Request 에 대해 Positive Response 와 함께 동일한 Seed Value 를 Return 하도록 수정되어야 한다. Error Count 가 2 일 때 NRC 36 Return 되도록 수정필요.
동작 영향	연속된 Seed Request 에 대해 동일한 Seed Value 로 긍정 응답 Error Count 가 2 일 때 NRC 36 응답
설정 영향	없음
ASW 조치 사항	없음

6.3.56 Version 1.9.4

■ 신규기능

■ N/A

■ 개선사항

■ **DcmDspStartRoutineFnc 사용시 컴파일 에러**

원인	Cdd 사용 시에 DcmDspStartRoutineFnc 으로 입력한 함수 원형을 찾을 수 없어 컴파일 에러가 발생. Note : RTE 를 통해 Routine Control 사용 시 문제 없음.
동작 영향	DcmDspStartRoutineFnc 사용 가능하도록 수정.

설정 영향	없음
ASW 조치 사항	없음

■ **Routine control Request result 요청 시 App 에서 pending 을 한 후에 응답하면, 추가 데이터가 모두 0 으로 출력되는 문제**

원인	Routine control(SID 31) Request result 요청에 대한 Response 시, Pending 없이 즉시 응답 할 때에는 User Response buffer update 내용이 반영 되나, App 에서 Pending 이후 응답을 한 경우, User Response buffer update 내용이 반영 되지 않고, 0x00 으로 응답 하는 현상.
동작 영향	Request result Pending 요청 이후에도 정상 응답하도록 수정.
설정 영향	없음
ASW 조치 사항	없음

■ **RoutineControl 에서 Start 를 제외한 Stop, Request result sub-function 에서 VARIABLE_LENGTH 기능 동작하지 못하는 문제**

원인	Generate 시에 Dcm_GaaRoutineSignalOutData 에 VARIABLE_LENGTH 가 반영이 안되었음.
동작 영향	VARIABLE_LENGTH 가 반영 되도록 수정함.
설정 영향	없음
ASW 조치 사항	없음

■ **RoutineControl 에서 sub-service request result 의 Signal Type UINT16, UINT32 생성 안되는 문제**

원인	Generate 시에 Dcm_GaaRoutineSignalOutData16 와 Dcm_GaaRoutineSignalOutData32 의 Data 반영 안되었음.
동작 영향	Dcm_GaaRoutineSignalOutData16 와 Dcm_GaaRoutineSignalOutData32 의 Data 반영 되도록 수정.
설정 영향	없음
ASW 조치 사항	없음

6.3.57 Version 1.9.3

■ 신규기능

■ N/A

■ 개선사항

■ **Security Level L21 이타스 Library 에서 오토에버 Library 적용**

원인	Security Level L21 이타스 Library 에서 오토에버 Library 적용 필요
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.58 Version 1.9.2

■ 신규기능

■ N/A

■ 개선사항

■ RoutineControl stop sub-function DataIn 수정

원인	SID 31 Routine Control 에서 AppDcm_Stop_CalibrationActuator 으로 DataIn1 값을 제대로 넘겨주지 못하는 문제
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ RemainUnlockCondition 기능 추가

원인	CGW Unlock 이후 Extended Session -> Security Access -> Extended Session 으로 천이 시에도 Security Level 이 유지되도록 하기 위하여 Session 변경에 따른 Security Level 유지 여부에 대한 사양 변경이 요청되었고 이에 따라 사양 만족을 위하여 Secure Access 변경사항 개발이 필요함.
동작 영향	Remain Unlock Condition 설정 시, Extended Session -> Security Access -> Extended Session 으로 천이 시에도 Security Level 이 유지됨.
설정 영향	DcmGeneral 에서 Remain Unlock Condition 설정 지원
ASW 조치 사항	없음

■ F1KM HSM 적용

원인	F1KM 보드를 위해 HSM 과 Dcm 변경과 가이드 추가
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.59 Version 1.9.1

■ 신규기능

■ N/A

■ 개선사항

■ Dcm.exe file 깨짐으로 Generate error 발생

원인	1. Dcm.exe file 깨짐으로 인해 Generate error 발생하므로 새로 생성하여 추가 필요 2. Dcm.template 의 임시코드인 INCLUDE 가 포함되어 컴파일 에러가 발생하므로 삭제 후 배포 필요함
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ RTRT 동적검증 Dcm 수정

원인	RTRT 동적검증으로 인해 추가 수정 필요(DataType Autosar 사양에 맞도록 수정 및 중복 define 제거)
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.60 Version 1.9.0

■ 신규기능

■ N/A

■ 개선사항

■ SID31 Subfunction NRC 우선 순위 변경

원인	ES95486 사양에 따라 SID 0x31 이 아닌 것들만 Subfunction Check 수행하도록 NRC 체크 순서 변경 필요
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ QZN04 사양 지원

원인	QZN04 Diag 사양 검토에 따른 추가 수정 필요 1) Security Access : Fail Count 처리 QZN04 사양 적용 2)ComCommunication: subfunc 01(enableRxAndDisableTx), 02(disableRxAndEnableTx) 동작 QZN04 사양 적용 3) ECUReset : subfunc 01, 02, 03 만 사용하도록 QZN04 사양 적용
동작 영향	DCM_QZN04_SUPPORT 설정 시 QZN04 사양에 따라 진단서비스 동작
설정 영향	DcmGeneral 의 Standard Support 에서 DCM_ QZN04_SUPPORT 지원
ASW 조치 사항	없음

6.3.61 Version 1.8.0

■ 신규기능

■ N/A

■ 개선사항

■ DcmTimStrP2(Star)ServerAdjust PDF Max 값 최신 사양 기준으로 수정

원인	DcmTimStrP2(Star)ServerAdjust PDF 와 DcmDspSessionP2(Star)ServerMax Max 값을 ASR4.3.0 사양 기준으로 수정
동작 영향	없음
설정 영향	DcmTimStrP2(Star)ServerAdjust 와 DcmDspSessionP2(Star)ServerMax 를 Max 값 이상으로 설정 불가능

	DcmTimStrP2ServerAdjust 의 Min ~ Max value - AUTOSAR 4.3.0 : 0 ~ 1 DcmTimStrP2StarServerAdjust 의 Min ~ Max value - AUTOSAR 4.3.0 : 0 ~ 5 DcmDspSessionP2ServerMax 의 Min ~ Max value - AUTOSAR 4.3.0 : 0 ~ 1 DcmDspSessionP2StarServerMax 의 Min ~ Max value - AUTOSAR 4.3.0 : 0 ~ 100
ASW 조치 사항	없음

■ ES95486-50 사양 지원

원인	ES95486-50 사양 지원을 위한 수정 필요
동작 영향	DCM_ES95486_50_SUPPORT 설정 시 ES95486_50 사양에 따라 진단서비스 동작
설정 영향	DcmGeneral 의 Standard Support 에서 DCM_ES95486_50_SUPPORT 지원
ASW 조치 사항	없음

■ Indication Callback ASR 4.3.0 적용

원인	manufacturer indication callback 의 호출 위치를 ASR 4.3.0 선적용할 필요가 있음
동작 영향	Request message 수신 시에, 다음과 같은 순서로 verification 실행. 1. Verification of Manufacturer permission (Call of the manufacturer interface indication operation) 2. Verification of the SID 3. Verification of the Diagnostic Session 4. Verification of the Service Security Access levels 5. Verification of the Supplier permission (Call of the Supplier interface indication operation) 6. Verification of the Mode rules for service IDs
설정 영향	없음
ASW 조치 사항	없음

6.3.62 Version 1.7.3

■ 신규기능

■ N/A

■ 개선사항

■ ES95486-02 사양 지원

원인	ES95486-02 사양 지원을 위한 수정 필요
동작 영향	DCM_ES95486_02_SUPPORT 설정 시 ES95486_02 사양에 따라 진단서비스 동작
설정 영향	DcmGeneral 의 Standard Support 에서 DCM_ES95486_02_SUPPORT 지원
ASW 조치 사항	없음

6.3.63 Version 1.7.2

■ 신규기능

■ N/A

■ 개선사항

■ SecurityAccess 예제 변경

원인	CSM 모듈 신규 배포에 따른 예제 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	SecurityAccess 사용시 샘플 코드를 참조하여 Application 수정 필요

■ RH850 F1K ICUS(HSM) 제약 사항 적용

원인	HSM 을 통한 Seed 생성시 비동기 방식 사용
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.64 Version 1.7.1

■ 신규기능

■ N/A

■ 개선사항

■ Compile Warning 개선

원인	Compile Warning 개선
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.65 Version 1.7.0

■ 신규기능

■ N/A

■ 개선사항

■ 신규 CSM 보안 모듈 적용

원인	신규 CSM 이 적용됨에 따라 L1, L9 의 샘플 코드가 변경되고 L21 을 위한 CSM API 가 변경되어 Dcm 내부 코드 수정됨. *신규 CSM 보안 모듈 : 기존 CAL 모듈의 기능을 포함하며 진성 난수를 발생시키는 HSM 기능이 내장되어 있음.(HSM 이 지원되는 MCU 는 CSM 매뉴얼 참조).
동작 영향	없음
설정 영향	없음
ASW 조치 사항	Appendix 10.2 샘플코드 참조

■ ReadDTCInformation 서비스에 SAEJ1939-73 DTC format 지원

원인	ReadDTCInformation 의 sub service reportNumberOfDTCByStatusMask 등의 response message 에 DTCFormatIdentifier 0x4 를 사용할 수 있도록 수정
동작 영향	없음
설정 영향	DemGeneral / DemTypeOfDTCSupported = DEM_DTC_TRANSLATION_J2012DA_FORMAT_04
ASW 조치 사항	DemTypeOfDTCSupported 설정 수정 필요

6.3.66 Version 1.6.0

■ 신규기능

■ N/A

■ 개선사항

■ Dcm SW-Component 에 대한 RTE Warning [WRN 103: There is no execution context information of RunnableEntity] 개선

원인	Dcm SW-Component 의 Runnable 에 연결된 Dcm R Port 의 Synchronous Server Call Point (이하 SSCP)를 Rte 설정에서 찾지 못하여 Warning 이 발생함. 실제 동작은 Dcm MainFunction 내에서 Rte_Call_~ 형태로 Runnable 을 호출하므로 동작에 이상은 없음. Bsw 쪽 Dcm MainFunction Task 에 SW-C 쪽 Runnable 의 SSCP 를 Mapping 하여 Rte Warning 을 피함.
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.67 Version 1.5.2

■ 신규기능

■ N/A

■ 개선사항

■ AUTOSAR_SWS_DiagnosticCommunicationManager 4.2.2 일부 적용 : DcmDslDiagRespMaxNumDiagResp

원인	Fail Safety 측면에서 DcmDslDiagRespMaxNumDiagResp 설정에 대해서 상위 사양인 AUTOSAR_SWS_DiagnosticCommunicationManager(이하 AUTOSAR Dcm) 4.2.2 를 적용함.
동작 영향	DcmDslDiagRespMaxNumDiagResp 를 0xFF 로 설정 시, - AUTOSAR Dcm 4.0.3 (기존) 의 경우 : No Limit. 무한 Response Pending. - AUTOSAR Dcm 4.2.2 (현재) 의 경우 : 255 회 Response Pending 후 General Reject (NRC10) 처리.
설정 영향	없음
ASW 조치 사항	없음

6.3.68 Version 1.5.1

■ 신규기능

■ N/A

■ 개선사항

■ Rte_Dcm_Type.h 에 Security Level 매크로 상수 추가 생성

원인	Security Level 에 대한 매크로 상수 아래와 같이 변경 - DCM_SEC_LEV_LOCKED (0x00) : 기존 - DCM_SEC_LEV_ALL (0xFF) : 기존 - DCM_SEC_LEV_L1 (0x01) : 기존 - DCM_SEC_LEV_L9 (0x09) : Dcm 1.5.1 부터 추가 - DCM_SEC_LEV_L21 (0x21) : Dcm 1.5.1 부터 추가
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.69 Version 1.5.0

■ 신규기능

■ N/A

■ 개선사항

■ Client-Server Interface Operation 이 설정에 따라 잘못된 순서로 생성되던 문제 해결 (SWP 변경 분석 자료 참고)

원인	Generator Logic 오류 - Dcm 설정이 generator 로직 내 hash 에 값으로 저장되는 key 의 순서 (1, 2, 3, ..., 9, 10, 11, ...) 와 hash 의 값을 불러오는 key 의 순서 (1, 10, 11, ..., 19, 2, 20, ...)가 상이한 부분 일부 존재
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Seed-Key(L1), Advanced Seed-Key(L9) Sample Code 업데이트

원인	Cal 모듈 업데이트 및 코드 안정성 강화를 위한 Sample Code 업데이트
동작 영향	없음
설정 영향	없음
ASW 조치 사항	Seed-Key (L1), Advanced Seed-Key(L9) 알고리즘 사용 시 본 문서 Appendix 의 Sample Code 적용

■ C-SAC (L21) 알고리즘 사용시 설정하는 DcmAutronFblSecureLibUsed 파라미터 삭제 및 Fbl 자체 구현 시 사용자가 PublicKey 를 제공할 수 있도록 Dcm_GetPublicKey() Callout 함수 제공

원인	C-SAC 을 사용하는 제어기에서 Autron Fbl 을 사용하는 경우 무조건 Autron Fbl 에서 제공하는 Public Key 를 사용해야하므로 DcmAutronFblUsed 설정에 DcmAutronFblSecureLibUsed 설정의 의미가 포함 - DcmAutronFblUsed (=true) : Autron Fbl 사용 - DcmAutronFblSecureLibUsed (=*true*) : Autron Fbl 사용 시 C-SAC 인증을 위해 Autron Fbl 내의 PublicKey 사용
동작 영향	integration_Dcm 1.0.9 이상 버전과 호환
설정 영향	DcmAutronFblSecureLibUsed 설정 삭제
ASW 조치 사항	C-SAC (L21) 알고리즘이 적용된 제어기에서 Autron Fbl 을 사용하지 않고 Fbl 을 자체 구현하는 경우 (DcmAutronFblUsed = false) Dcm_GetPublicKey() Callout 함수를 통해 플랫폼에 PublicKey 정보를 제공해주어야 함

■ C-SAC (L21) 알고리즘 사용시 사용자가 RandomSeed 업데이트 할 수 있도록 Dcm_GetRandomSeed() Callout 함수 제공

원인	C-SAC (L21) 알고리즘 사용시 RandomSeed 를 Callout 함수를 통해 업데이트 할 수 있도록 하여 Seed 의 Random 성 강화
동작 영향	- 최초 SecurityAccess (27 41) 요청 시 RandomSeed 업데이트 하는 로직을 Callout 함수에 따라 선택적으로 적용 - integration_Dcm 1.0.9 이상 버전과 호환
설정 영향	없음
ASW 조치 사항	C-SAC 알고리즘 구현시 Appendix 를 참고하여 RandomSeed 업데이트를 적용

■ Dcm_GetCertificationInfo()을 AUTOSAR 표준이 맞도록 변경 (C-SAC 적용 제어기의 경우 검토 필)

원인	C-SAC 적용되는 제어기에서 Dcm 1.5.0 이전 버전까지 CDD 형태로 사용되던 Dcm_GetCertificationInfo() 를 AUTOSAR 표준에 맞게 아래 사항 업데이트 - Rte Port Interface 지원 - Return Value 를 Std_ReturnType 으로 변경 - 전달인자 Type 명칭 변경 : Dcm_Certification_InfoType → Dcm_CertInfoType
동작 영향	없음
설정 영향	없음
ASW 조치 사항	C-SAC 알고리즘 구현시 Dcm 1.5.0 이전 버전의 Dcm_GetCertificationInfo()을 사용하는 코드에 대해 아래 변경사항을 반드시 검토 및 적용 - Rte Port Interface 방식으로 사용 권고 - 변경된 Return Value 적용 - 변경된 전달인자 Type 명 적용

6.3.70 Version 1.4.1

■ 신규기능

■ N/A

■ 개선사항

■ InputOutputControlByIdentifier Operation 생성 오류 문제 개선

원인	Generator 로직 내에서 설정 파일의 잘못된 Hash Sorting 으로 인해 InputOutputControlByIdentifier 서비스의 일부 Operation 생성 오류가 발생
동작 영향	Generator 개선
설정 영향	없음
ASW 조치 사항	없음

6.3.71 Version 1.4.0

■ 신규기능

■ N/A

■ 개선사항

■ ProgrammingSession 의 DcmDspSessionForBoot 가 DCM_NO_BOOT 일 때 StopDiagnosticSession (SID20) 부정응답 General Reject (NRC10)를 Application 영역에서 처리하도록 변경

원인	ES95486-00 참고. StopDiagnosticSession (20 hex)의 부정응답 NRC10 (General Reject) 는 "Reprogramming routine is not completed yet" 조건에서 발생. 이는 "ProgrammingSession 일 때 무조건" 라고 해석할 수 없으므로 General Reject 부정응답을 구현하기 위해서는 Application 에서 판단해야 함
동작 영향	없음
설정 영향	없음
ASW 조치 사항	Appendix 를 참고하여 StopDiagnosticSession 의 부정응답 NRC10 (General Reject)를 구현

■ Client-Server Interface Operation 이 설정에 따라 잘못된 순서로 생성되던 문제 해결

원인	Generator Logic 오류, 설정파라미터가 generator 내부 stack 에 push 되는 순서 (1, 2, 3, ..., 9, 10, 11, ...)와 generation code 가 생성되도록 stack 의 값에 접근하는 순서 (1, 10, 11, ..., 19, 2, 20, ...)가 달랐기 때문에 문제 발생
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Response Pending (0x78) 이후에 suppressPosRspMsgIndicationBit 고려하지 않고 Positive/Negative Response 처리하도록 수정

원인	ES95486-00 사양에 다음과 같은 문구에 따라 적용함. "When requestCottectlyReceived-ResponsePending (NRC = 78 hex) response code is used, the server shall always send a final response (positive or negative) independent of the suppressPosRspMsgIndicationBit value."
동작 영향	전제 조건 : 오토에버 Fbl 사용, DcmSendRespPendOnTransToBoot true 위 조건에서 suppressPosRspMsgIndiciationBit true 조건으로 Programming Session 천이 요청을 하면 Response Pending (NRC 78) 을 내보낸 뒤 Positive Response 를 처리하도록 변경
설정 영향	없음

ASW 조치 사항	없음

■ DcmDsdSidTabSessionLevelRef, DcmDsdSidTabSecurityLevelRef, DcmDsdSubServiceSecurityLevelRef, DcmDsdSubServiceSessionLevelRef 설정을 사용자가 설정할 수 있도록 변경

원인	사용자가 서비스와 서브 서비스를 제어기 사양에 맞도록 설정하여 사용할 수 있으므로 플랫폼 재배포 문제 등의 리스크를 줄일 수 있음
동작 영향	없음
설정 영향	다음 항목에 대해 SRS 를 고려한 설정 불필요 DcmDsdSidTabSessionLevelRef DcmDsdSidTabSecurityLevelRef DcmDsdSubServiceSecurityLevelRef DcmDsdSubServiceSessionLevelRef
ASW 조치 사항	위 설정 항목을 ES95486-00 과 제어기 사양에 맞도록 설정 필요 (Appendix 참고)

6.3.72 Version 1.3.1

■ 신규기능

■ N/A

■ 개선사항

■ 'Critical normal mode'로 인한 진단 서비스 처리 불가 상태 시 ConditionsNotCorrect 부정응답 (NRC22) 처리

원인	ES95486-00 진단서비스의 Supported Negative Response Codes 에서 [Use when the server is in a critical normal mode activity and ~~] 라는 문구가 있는 경우 해당 부정응답의 처리는 Application 에서 처리하여야함. SID28 CommunicationControl, SID29 EnableNormalMessageTransmission, SID 85 ControlDTCSetting 서비스 해당
동작 영향	없음
설정 영향	없음
ASW 조치 사항	(Appendix 참고) 현재 제어기가 SID28 CommunicationControl, SID29 EnableNormalMessageTransmission, SID 85 ControlDTCSetting 서비스를 처리할 수 없는 상태일 경우 ServiceRequestSupplierNotification_Indication() 내에서 부정응답(E_NOT_OK)과 함께 NRC22 (*ErrorCode = 0x22) Return

■ User Defined Service Function 가이드 업데이트

원인	최근 업체에서 자체적으로 서비스를 구현하는 Usecase 가 늘어남에 따라 Dcm User Manual chapter 7.3.1.15 에 기제공되고 있는 User Defined Service Function 의 가이드를 보강해야할 필요성이 증가
동작 영향	없음
설정 영향	없음
ASW 조치 사항	플랫폼에서 제공되는 진단서비스 이외에 자체적으로 User Defined Service Function 을 등록하여 사용하는 경우 가이드의 주의사항을 준수하였는지 확인 필요

■ DLT 미지원

원인	AUTOSAR Diangostic Communication Manager 4.2.2 사양 반영 - DLT 미지원
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ RoutineControl Service 관련 Generator 오류 수정

원인	RoutineControl 관련하여 다음과 같이 설정시 컴파일 오류 발생하는 문제를 개선 1) DcmDspRoutineStartOutSignal, DcmDspRoutineStopOutSignal, DcmDspRoutineRequestResOutSignal 컨테이너의 설정 파라미터인 DcmDspRoutineSignalType 중에 UINT8 이 존재하지 않을 때 컴파일 에러 발생 2) DcmDspRoutineFixedLength 를 false 로 설정한 DcmDspRoutine 컨테이너의 Identifier 가 DcmDspRoutineFixedLength 를 true 로 설정한 DcmDspRoutine 컨테이너의 Identifier 값보다 작을 경우에서 DcmDspRoutineStopInSignal 을 두 컨테이너 모두 사용할 경우 컴파일 에러 발생하는 문제 수정
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

■ Callout Function 'Dcm_GetProgConditions()', 'Dcm_SetProgConditions()' Description 추가

원인	Callout Function 의 잘못된 사용으로 문제가 발생할 소지가 있기 때문에 본 매뉴얼에 관련 내용 강화 필요

동작 영향	없음
설정 영향	없음
ASW 조치 사항	Autron Fbl 을 사용하는 경우에는 Callout 함수인 Dcm_GetProgConditions(), Dcm_SetProgConditions() 수정 불가

■ 리프로그래밍 이후 PROG_CONDITIONS 영역 초기화

원인	리프로그래밍 이후에 RTSW 에서 ApplUpdated flag 를 초기화해주는 로직이 존재하지 않음
동작 영향	리프로그래밍 이후에 Dcm_Init() 단계에서 PROG_CONDITIONS 영역을 초기화하면서 ApplUpdated flag 를 초기화하도록 로직 수정
설정 영향	없음
ASW 조치 사항	없음

■ Response Pending 이후에 Positive Response 가 처리되면 ServiceRequestSupplierNotification_Confirmation() 의 Dcm_ConfirmationStatusType 이 DCM_RES_POS_OK 가 되도록 수정

원인	Response Pending 이후에 Positive Response 가 정상적으로 처리되어도 ServiceRequestSupplierNotification_Confirmation() 의 Dcm_ConfirmationStatusType 이 DCM_RES_NEG_OK 로 들어오는 현상
동작 영향	최초 Response Pending 이후에 Positive Response 으로 처리된 경우에 ServiceRequestSupplierNotification_Confirmation() 의 Dcm_ConfirmationStatusType 이 아래와 같은 차이가 있다. - 이전 Dcm : DCM_RES_NEG_OK (최초 부정응답 기준) - 현재 Dcm : DCM_RES_POS_OK (마지막 긍정응답 기준)
설정 영향	없음
ASW 조치 사항	이전 버전의 Dcm 에서 ServiceRequestSupplierNotification_Confirmation()의 Dcm_ConfirmationStatusType 을 이용하여 로직을 구성하였다면 동작 영향을 참고하여 로직 검토 필요

6.3.73 Version 1.3.0

■ 신규기능

■ DcmPageBufferCfg

원인	PagedBuffer 기능은 Tx Response Length 가 Tx Buffer Size 보다 클 경우에도 Response 가 가능하게 하여 불필요하게 Tx Buffer Size 크게 잡는 메모리 낭비 방지
동작 영향	1. PagedBufferEnabled : True 인 경우 - Tx Response Length > Tx Buffer Size 일 때 긍정응답 2. PagedBufferEnabled : False 인 경우 - Tx Response Length > Tx Buffer Size 일 때 부정응답 (NRC14, DCM_E_RESPONSETOOLONG)
설정 영향	1. 새로운 컨테이너 추가 - Dcm/DcmConfigSet/DcmPageBufferCfg 2. SRS 에 Paged Buffer 항목 추가
ASW 조치 사항	없음

■ 개선사항

■ Memmap Section 최적화

원인	- 컴파일 시 불필요한 Memmap.h Inclusion 으로 인해 작업 속도 저하
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.74 Version 1.2.2

■ 신규기능

■ N/A

■ 개선사항

■ CSAC 사용시 HAC Random Generate 적용

원인	HMC 요구 사항으로 CSAC 알고리즘의 Random Generate 로직이 Autron Random Generate 에서 Random 성이 강화된 HAC Random Generate 로 변경
동작 영향	Random Generate 로직 변경이 있으나, 결과적으로 CSAC 동작에 영향은 없음
설정 영향	CryptoLib 1.0.4, Cal 1.0.8, FBL_core 1.7.1, integration_Fbl 1.9.0 이상 버전과 의존성을 가짐
ASW 조치 사항	없음

■ Cypress 지원을 위한 Dcm_CallOuts.h 변경

원인	Dcm_McuDepProgConditionsType 구조체가 HWRESOURCE_INFINEON, HWRESOURCE_FREESCALE, HWRESOURCE_RENESAS 에 의해서만 정의되었었기 때문에 CYPRESS 제어기에서 컴파일 오류 문제 발생
동작 영향	CYPRESS 제어기에서도 Dcm_McuDepProgConditionsType 구조체가 정의되도록 수정
설정 영향	없음
ASW 조치 사항	없음

6.3.75 Version 1.2.1

■ 신규기능

■ N/A

■ 개선사항

■ 유저매뉴얼 DcmDslBufferSize 내용 수정

원인	SRS 변경에 따른 유저매뉴얼 수정
동작 영향	없음
설정 영향	SRS 에서 DcmDslBufferSize 관련 내용 삭제 - CSAC 사용시 : Tx Buffer Size 255, Rx Buffer Size 620 설정 - CSAC 미사용시 : Tx, Rx Buffer Size 255 설정
ASW 조치 사항	없음

■ 유저매뉴얼 DcmDslBufferSize 내용 수정

원인	Std_Types.h 간소화에 따라 Dcm 모듈 내에서만 사용하는 E_REQUEST_NOT_ACCEPTED 매크로에 대해 Dcm 모듈화
동작 영향	Software Component Generation 여부와 상관없이 무조건 E_REQUEST_NOT_ACCEPTED 생성
설정 영향	없음
ASW 조치 사항	없음

■ RoutineControl 서비스 Application Callback 에서 OpStatus 가 DCM_INITIAL 에서 DCM_PENDING 으로

바뀌지 않는 오류 수정

원인	DCM_PENDING 처리 로직 오류
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.76 Version 1.2.0

■ 신규기능

■ N/A

■ 개선사항

■ EnableNormalMessageTransmission 서비스 부정응답 변경

원인	ES95486-00 V1.9.0 이후 버전에서 변경될 예정사항 선반영
동작 영향	Dcm 1.2.0 이전 : - NRC22(DCM_E_CONDITIONSNOTCORRECT) 지원 Dcm 1.2.0 이후 : - NRC12(DCM_E_SUBFUNCTIONNOTSUPPORTED) 지원 - NRC13(DCM_E_INCORRECTMESSAGELENGTHORINVALIDFORMAT) 지원 - NRC22(DCM_E_CONDITIONSNOTCORRECT) 지원
설정 영향	없음
ASW 조치 사항	없음

■ DcmSeedInvalidationForNewRequest 설정 삭제

원인	Usecase 없음, 스펙 상 해당 설정 근거 없음
동작 영향	기존 DcmSeedInvalidationForNewRequest 설정 false 와 동일하게 동작
설정 영향	Dcm/DcmConfigSet/DcmGeneral/DcmSeedInvalidationForNewRequest 삭제
ASW 조치 사항	없음

■ RoutineControl 서비스 Application Callback 에서 Pending Response 처리 시 Sequence Error 발생하는 오류 수정

원인	RoutineControl 서비스의 StartRoutine, StopRoutine 을 처리하는 App Callback Function 에서 Response Pending 을 처리하게 되면 다음 Request Sequence

	Flag 가 제대로 적용되지 않음
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

6.3.77 Version 1.1.2

■ 신규 기능

■ N/A

■ 개선 사항

■ 진단 보안 관련 유저매뉴얼 상세화

- Seed-Key (L1), Adv. Seed-Key (L9) Sample Code 분리 및 업데이트
- Deviation 에 SecurityAccess 서비스 사용시 UserCode 필요함 공지
- Interface Description 수정 : Xxx_CompareKey

원인	HSAC 적용을 위한 사용자 가이드 제공 필요
동작 영향	없음
설정 영향	없음
ASW 조치 사항	Seed-Key (L1), Advanced Seed-Key (L9) 알고리즘 적용시 Appendix 10.2, 10.3 참고하여 코드 작성

6.3.78 Version 1.1.1

■ 신규 기능

■ N/A

■ 개선 사항

■ PDF 업데이트에 따른 Configuration 변경 (DcmDslMainConnection 이하 Category F 에서 C 로 변경)

원인	CAN Import/Harmonize 이후 USD_ON_CAN 부분에 대해 수동 설정이 필요한 부분에 대해 Fixed Parameter 해제
동작 영향	없음

설정 영향	DcmDslMainConnection 컨테이너 이하 설정 사용자 변경 가능
ASW 조치 사항	없음

■ 10.2 Advanced SeedKey Algorithm (HSAC) Sample Code Update

원인	HSAC 적용을 위한 사용자 가이드 제공 필요
동작 영향	없음
설정 영향	없음
ASW 조치 사항	Advanced Seed-Key (L9) 알고리즘 적용시 Appendix 참고하여 코드 작성

6.3.79 Version 1.1.0

■ 신규 기능

■ AUTRON_AUTOSAR_Dcm_ECU_Configuration_PDF.arxml Update

원인	CSAC 알고리즘 사용시 인증서 검증을 위한 공개키 관리 필요
동작 영향	1. Fbl 사용 여부 (DcmAutronFblUsed) - true : Autron FBL 사용 - false : 자체 FBL 사용 2. Fbl 제공 Public Key 사용 여부 (DcmAutronFblSecureLibUsed) - true : Autron FBL 에 포함된 공개키 사용 - false : 자체 공개키 사용
설정 영향	DcmAutronFblUsed, DcmAutronFblSecureLibUsed 설정 추가
ASW 조치 사항	SRS 에 CSAC 알고리즘 (L21) 사용 명기

■ 개선 사항

■ Runnable 호출 시 Negative Response Code 를 0x00 (DCM_E_POSITIVERESPONSE)로 초기화

원인	사용자 Runnable 설계시 플랫폼으로부터 Negative Response Code 를 일관성있게 전달받아 설계시 유리함
동작 영향	RTE Port Interface 를 통한 Runnable 호출 시 ErrorCode 가 0x00 으로 초기화
설정 영향	없음
ASW 조치 사항	해당 사항 고려하여 ASW 설계

6.4 Module Release Notes

6.4.1 Limitations

- Pre-Compile 지원
- OBD protocol 미지원
- ResponseOnEvent Service 미지원.
- LinkControl Service 미지원
- RequestUpload 미지원
- DID signal type 은 uint8 만 지원, bit type 미지원
- DID, RID Signal 제약 사항은 AUTOSAR spec 4.2.1 을 따름

  Data 의 position, length , type 등에 대한 정의가 부족하여 AUTOSAR 4.2.1 의 제약사항 선적용
- DID, RID 는 오직 Client-Server Interface 만 지원
- Dynamically Defined Data Identifier, Periodic Data Identifier 관련 서비스 미지원
- ReadScalingDataByIdentifier (SID24) 서비스 미지원
- DLT 미지원
- READDTCINFORMATION SERVICE 의 아래 Sub-function 미지원
  i. reportDTCSnapshotRecordByRecordNumber(0x05)
  ii. reportMirrorMemoryDTCByStatusMask (0x0F)
  iii. reportMirrorMemoryDTCExtendedDataRecordByDTCNumber(0x10)
  iv. reportNumberOfMirrorMemoryDTCByStatusMask (0x11)
  v. reportNumberOfEmissionsRelatedOBDDTCByStatusMask (0x12)
  vi. reportEmissionsRelatedOBDDTCByStatusMask (0x13)
  vii. reportDTCWithPermanentStatus (0X15)
- Authentication (0x29) Service
  i. DcmDspAuthenticationUsePort 는 USE_SYNCH_FNC 만 지원

6.4.2 Deviations

- HMC ES95486-00E V1.8.0 Specification 에 따라 아래 서비스 추가 및 수정

  (1) 추가된 서비스

  - EnableNormalMsgTransmission
  - StopDiagnosticSession

  (2) 수정된 서비스

  - Dcm_DcmDiagnosticSessionControl

- Dcm_DcmStopDiagnosticSession
- Dcm_DcmSecurityAccess
- Dcm_DcmCommunicationControl
- Dcm_DcmEnableNormalMsgTransmission

■ SecurityAccess(0x27) 서비스 사용 시 사용하는 보안 알고리즘의 종류에 따라 (Seed-Key, Advanced Seed-Key) Appendix 10.2, 10.3 에 기재된 Sample Code 를 활용한 User Code 를 추가해야 함

■ HMC ES95486-00E V1.8.0 Specification 에 따라 EnableNormalMessageTransmission 서비스가 Normal Message 와 NM Message 를 동시에 제어하도록 수정

■ AUTOSAR_SWS_DiagnosticCommunicationManager_4.2.2 Specification 에 따라 DcmDspMaxDidToRead Parameter 가 1 - 65535 의 값을 갖도록 수정

■ EnableNormalMessageTransmission 서비스에 대한 부정응답을 ES95486-00E V1.9.0 이후에 맞도록 변경

■ AUTOSAR_SWS_DiagnosticCommunicationManager_4.2.2 Specification 에 따라 BswM_Dcm_ApplicationUpdated() 기능 제공

■ AUTOSAR_SWS_DiagnosticCommunicationManager_4.3.0 Specification 버전의 Max 값 적용

DcmTimStrP2ServerAdjust 의 Min ~ Max value

- AUTOSAR 4.0.3 : 0~1000
- AUTOSAR 4.3.0 : 0~1

DcmTimStrP2StarServerAdjust 의 Min ~ Max value

- AUTOSAR 4.0.3 : 0~5000
- AUTOSAR 4.3.0 : 0~5

DcmDspSessionP2ServerMax 의 Min ~ Max value

- AUTOSAR 4.0.3 : 0~1000
- AUTOSAR 4.3.0 : 0~1

DcmDspSessionP2StarServerMax 의 Min ~ Max value

- AUTOSAR 4.0.3 : 0~100000
- AUTOSAR 4.3.0 : 0~100

■ AUTOSAR_SWS_DiagnosticCommunicationManager_4.3.0 Specification 에 따라 Verifications call 순서 적용

i. Verification of Manufacturer permission (Call of the manufacturer interface indication operation)
ii. Verification of the SID
iii. Verification of the Diagnostic Session

iv. Verification of the Service Security Access levels

v. Verification of the Supplier permission (Call of the Supplier interface indication operation)

vi. Verification of the Mode rules for service IDs

■ AUTOSAR_SWS_DiagnosticCommunicationManager_4.4.0 Specification 에 따라, Authentication Service 선개발. AUTOSAR 기반 Authentication Service 를 사용할 때, Crypto Stack 은 반드시 R4.4.0 를 사용해야 함.

■ HMC ES95489-01(revision 7) 5.3.4.6 에 따라, Authentication (0x29) Service 의 아래 Sub-function 는 미지원하며 필요 시 User 가 구현하여 사용해야 한다.

i. verifyCerificateBidirectional (0x02)

ii. transmitCertificate (0x04)

iii. requestChallengeForAuthentication (0x05)

iv. verifyProofOfOwnershipUnidirectional (0x06)

v. verifyProofOfOwnershipBidirectional (0x07)

■ Authentication (0x29) Service 의 아래 NRC 는 SWP 에서 Callout 을 제공하며, NRC 로직은 Application 에서 구현하여 사용해야 한다.

i. Challenge calculation failed (0x59)

ii. Setting Access Rights failed (0x5A)

iii. DeAuthentication failed (0x5D)

iv. CRLintegrityFailed (0xF0)

v. CRLvalidityPeriodFailed (0xF1)

vi. RoleandRightofCertificateDenied (0xF2)

■ AUTOSAR_SWS_DiagnosticCommunicationManager_4.0.3 Specification 에서는 Jump to bootloader 시에, DCM_OEM(SYS)_BOOT_RESPAPP 을 미지원한다. 따라서, SendRespPendOnTransToBoot 를 통해 해당 기능을 선택해야 한다.

i. SendRespPendOnTransToBoot True : 0x78 → jump → Boot on FBL → 긍정응답

ii. SendRespPendOnTransToBoot False : 긍정응답 → jump → Boot on FBL

7 Configuration Guide

(1) 특별한 표기가 없을 경우 AUTOSAR 사양에 근거한 Parameter 이며 HYUNDAI AUTRON 에서 추가한 Parameter 일 경우 (AUTRON specific) 을 표기하였다

(2) Not Supported (N) 이면서 default 값이 있는 경우는 설정된 값이 변경되어서는 안된다.

7.1 General

7.1.1 DcmGeneral

Parameter Name	Value	Category
DcmDevErrorDetect	User Defined	C
DcmRespondAllRequest	TRUE	F
DcmRequestManufacturerNotificationEnabled	User Defined	C
DcmRequestSupplierNotificationEnabled	User Defined	C
Standard Support(1)	User Defined	C
DcmTaskTime	0.01	F
DcmVersionInfoApi	User Defined	C
DcmFblUsedType(2)	User Defined	C
DcmRemainUnlockCondition(3)	User Defined	C
DcmForcedEcuReset		N
DcmVinRef	User Defined	C
DcmObdProtocolId(5)	User Defined	C
DemIngetraged	User Defined	C
NvmIntegrated(6)	User Defined	C

(1) Standard Support

UDS 의 동작은 Standard Support 에 설정된 사양을 기반으로 한다.

- DCM_ISO14229_SUPPORT: ISO14229 사양 지원

- DCM_ES95486_SUPPORT: ES95486-00 사양 지원
- DCM_ES96590_SUPPORT: ES96590 사양 지원
- DCM_ES95486_02_SUPPORT: ES95486-02 사양 지원
- DCM_ES95486_50_SUPPORT: ES95486-50 사양 지원
- DCM_QZN04_SUPPORT: QZN04 사양 지원

(2) DcmFblUsedType

사용하는 FBL 의 타입 결정 시,

- DCM_AUTOEVER_FBL_UNUSED : Autoever FBL 을 사용 안함
- DCM_AUTOEVER_FBL_USED_RXCONNECTION_ID_UNUSED :
  Autoever FBL 사용 하며 FBL 에서 Rx Connection ID 를 사용안함. (FBL 버전 확인 필요)
- DCM_AUTOEVER_FBL_USED_RXCONNECTION_ID_USED :
  Autoever FBL 사용 하며 FBL 에서 Rx Connection ID 를 사용함. (FBL 버전 확인 필요)

(3) DcmRemainUnlockCondition

Remain Unlock Condition 설정 시,

Extended Session -> Security Access -> Extended Session 으로 천이 시에도 Security Level 이 유지됨

(5) DcmObdProtocolId

OBD 동작 프로토콜 설정

- DCM_PROTOCOLID_OBD_NONE : OBD 사용 안함
- DCM_PROTOCOLID_J1979_2_OBD_ON_UDS : J1979-2 OBD on Uds 프로토콜 사용
- DCM_PROTOCOLID_J1979_OBD2 : J1979 OBD2 프로토콜 사용

(6) NvmIntegrated

Light Platform 등의 Nvm 미포함 프로젝트에서는 NvmIntegrated = FALSE 설정 필요

7.1.2 DcmPageBufferCfg

Parameter Name	Value	Category
DcmPagedBufferEnabled	User Defined	C
DcmPagedBufferTimeout	User Defined	C

Note If you use a paged buffer, the value of patemeter 'DcmPagedBufferTimeout' should set to more than twice the configured value for parameter 'DcmTaskTime'.

7.1.3 DcmDsd

7.1.3.1 DcmDsdService

Parameter Name	Value	Category
DcmDsdSidTabId	User Defined	C

7.1.3.1.1 DcmDsdServiceTable

Parameter Name	Value	Category
DcmDsdSidTabSecurityLevelRef	User Defined	C
DcmDsdSidTabServiceId(1)	User Defined or From SRS(1)	F or C
DcmDsdSidTabSessionLevelRef	User Defined	C
DcmDsdSidTabSubfuncAvail	User Defined or From SRS	F or C
DcmDsdSidTabFnc(2)	User Defined(2)	C
DcmDsdSidTabModeRuleRef		N
DcmDsdServiceRole(3)	User Defined(3)	C

(1) DcmDsdSidTabServiceId

****일부 진단 service 에 대해서는 다른 모듈과 연관되어 동작하기때문에 임의로 변경할 수 없음.**

(2) DcmDsdSidTabFnc

User-defined service 를 사용하는 경우 function symbol 삽입

(3) DcmDsdServiceRole

If user use Authenticaion Service, this parameter must be configured.

Default value: 0

DcmDsdSubService

Parameter Name	Value	Category
DcmDsdSubServiceId(1)	User Defined or From SRS(1)	F or C

Parameter Name	Value	Category
DcmDsdSubServiceSecurityLevelRef	User Defined	C
DcmDsdSubServiceSessionLevelRef	User Defined	C
DcmDsdSubServiceFnc	User Defined(2)	C
DcmDsdSubServiceModeRuleRef		N
DcmDsdSubServiceRole(3)	User Defined(3)	C

(1) DcmDsdSubServiceId

****일부 진단 service 에 대해서는 다른 모듈과 연관되어 동작하기때문에 임의로 변경할 수 없음.**

(2) DcmDsdSubServiceFnc

User-defined service 를 사용하는 경우 function symbol 삽입

(2) DcmDsdSubServiceRole

If user use Authenticaion Service, this parameter must be configured.

Default value: 0

7.1.4 DcmDsl

7.1.4.1 DcmDslBuffer

Parameter Name	Value	Category
DcmDslBufferSize(1)	User Defined	C

(1) DcmDslBufferSize:

Size of the diagnostic buffer in bytes.

For a linear buffer the size shall be as large as the longest diagnostic message (request or response).

For a paged buffer the size has impacts on the application performance..

Note This value is set to 255 by default except for using CSAC algorithm (Security Level L21).

CSAC 사용 시, rx buffer size 620 으로 설정 필요

SecurityAccess 2.0 사용 시 rx buffer size 501byte 추가 필요

OTA 사용 시 rx buffer size 1026 설정 필요

RXSWIN 사용 시 rx buffer size Application 에서 구현 의도에 맞게 설정 필요

7.1.4.2 DcmDslCallbackDCMRequestService

Container Name	Value	Category
DcmDslCallbackDCMRequestService(1)	User Defined	C

(1) DcmDslCallbackDCMRequestService:

The name of this container is used to define the name of the R-Port through which the DCM access the interface CallbackDCMRequestServices.

The R-Port is named CallbackDCMRequestServices_<SWC> where _<SWC> is the name of the container DcmDslCallbackDCMRequestService

7.1.4.3 DcmDslDiagResp

Parameter Name	Value	Category
DcmDslDiagRespOnSecondDeclinedRequest		N
DcmDslDiagRespMaxNumRespPend	User Defined	C

7.1.4.4 DcmDslProtocolRow

Parameter Name	Value	Category
DcmDslProtocolID	User Defined	C
DcmDslProtocolEndiannessConvEnabled		N
DcmDslProtocolIsParallelExecutab		N
DcmDslProtocolPreemptTimeout	User Defined	C
DcmDslProtocolPriority	User Defined	C
DcmTimStrP2ServerAdjust	User Defined	C
DcmTimStrP2StarServerAdjust	User Defined	C
DcmDslProtocolRxBufferID	User Defined	C
DcmDslProtocolSIDTable	User Defined	C
DcmDslProtocolTxBufferID	User Defined	C

Parameter Name	Value	Category
DcmDslProtocolSessionRef	User Defined	C
DcmDslProtocolTransType	TYPE2	F
DcmSendRespPendOnTransToBoot	User Defined	C

7.1.4.4.1 DcmDslConnection

Sub Container Name	Value	Category
DcmDslMainConnection	User Defined	C
DcmDslPeriodicTransmission		N
DcmDslResponseOnEvent		N

DcmDslMainConnection

Parameter Name	Value	Category
DcmDslProtocolRxTesterSourceAddr	User Defined	C
DcmDslPeriodicTransmissionConRef		N
DcmDslROEConnectionRef		N
DcmDslProtocolAuthenticaionConnectionId *	User Defined	C

Note: DcmDslProtocolAuthenticaionConnectionId is only available when Authentication Service is used.

7.1.4.4.1.1 DcmDslProtocolRx

Parameter Name	Value	Category
DcmDslProtocolRxAddrType	User Defined (DCM_FUNCTIONAL_TYPE or DCM_PHYSICAL_TYPE)	C
DcmDslProtocolRxChannelId *	User Defined (ComM Channel Id of DcmDslProtocolRxComMChannelRef)	C
DcmDslProtocolRxPduId	User Defined (0 or 1)	C

Parameter Name	Value	Category
DcmDslProtocolRxPduRef	User Defined (DcmRxPduId reference for reception of requests)	C
DcmDslProtocolRxComMChannelRef *	User Defined (Reference to the ComMChannel on which the DcmDslProtocolRxPdu is received)	C

Note : DcmDslProtocolRxChannelId, DcmDslProtocolRxComMChannelRef 의 ComMChannelId 는 동일하여야 함.

7.1.4.4.1.1.2 DcmDslProtocolTx

Parameter Name	Value	Category
DcmDslProtocolTxPduRef	User Defined (DcmTxPduId reference for transmission of responses)	C
DcmDslTxConfirmationPduId	User Defined (Pud id of DcmDslProtocolRxPduId)	C

DcmDslPeriodicTransmission

Sub Container Name	Value	Category
DcmDslPeriodicConnection		N

7.1.4.4.2 DcmDslPeriodicConnection

Parameter Name	Value	Category
DcmDslPeriodicTxConfirmationPduId		N
DcmDslPeriodicTxPduRef		N

7.1.4.4.3 DcmDslResponseOnEvent

Parameter Name	Value	Category
DcmDslROETxPduRef		N
DcmDslRoeTxConfirmationPduId		N

7.1.4.5 DcmDslServiceRequestManufacturerNotification

Parameter Name	Value	Category
ShortName	User Defined	C

7.1.4.6 DcmDslServiceRequestSupplierNotification

Parameter Name	Value	Category
ShortName	User Defined	C

7.1.5 DcmDsp

Parameter Name	Value	Category
DcmDspPowerDownTime(1)	User Defined	C
DcmDspMaxDidToRead(2)	User Defined	C
DcmDspMaxPeriodicDidScheduler		N
DcmDspMaxPeriodicDidToRead		N
DcmDspDDDIDcheckPerSourceDID		N

(1) DcmDspPowerDownTime:

This parameter indicates to the client the minimum time of the stand-by sequence the server will remain in the power-down sequence. The resolution of this parameter is one second per count.

The following values are valid:

00 - FE hex: 0 - 254 s powerDownTime;

FF hex: indicates a failure or time not available.

In case the parameter DcmDspPowerDownTime is present, the DCM

shall set the powerDownTime in positive response to sub-service

enableRapidPowerShutDown of ECUReset service with value set in DcmDspPowerDownTime

(2) DcmDspMaxDidToRead:

Indicates the maximum allowed DIDs in a single "ReadDataByIdentifier" request.

The buffer size should be considered.

The following values are valid : 1 - 65535

7.1.5.1 DcmDspComControl

Sub Container Name	Value	Category
DcmDspComControlAllChannel	-	C
DcmDspComControlSpecificChannel	-	C
DcmDspComControlSetting		N

7.1.5.1.1 DcmDspComControlAllChannel

Parameter Name	Value	Category
DcmDspAllComMChannelRef	Reference to ComM channel.	C

7.1.5.1.2 DcmDspComControlSpecificChannel

Parameter Name	Value	Category
DcmDspSubnetNumber(1)	1	C
DcmDspSpecificComMChannelRef	Reference to ComM channel.	C

(1) DcmDspSubnetNumber : ES95486-00 Only

7.1.5.1.3 DcmDspComControlSetting

Parameter Name	Value	Category
DcmDspComControlCommunicationReEnableModeRuleRef		N

7.1.5.2 DcmDspData

Parameter Name	Value	Category
DcmDspDataConditionCheckReadFnc(1)	User Defined	C
DcmDspDataEcuSignal		N
DcmDspDataFreezeCurrentStateFnc(2)	User Defined	C
DcmDspDataGetScalingInfoFnc		N
DcmDspDataReadDataLengthFnc(3)	User Defined	C
DcmDspDataReadFnc(4)	User Defined	C
DcmDspDataResetToDefaultFnc(5)	User Defined	C
DcmDspDataReturnControlToEcuFnc(6)	User Defined	C
DcmDspDataShortTermAdjustmentFnc(7)	User Defined	C
DcmDspDataWriteFnc(8)	User Defined	C
DcmDspDataReadEcuSignal(9)	User Defined	C
DcmDspDataSize(10)	User Defined	C
DcmDspDataType(11)	User Defined	C
DcmDspDataUsePort(12)	User Defined	C
DcmDspDataInfoRef(13)	User Defined	C
DcmDspDataBlockIdRef(14)	User Defined	C

(1)DcmDspDataConditionCheckReadFnc:

Function name to demand application if the conditions (e.g. System state) to read the DID are correct. (ConditionCheckRead-function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*".

This parameter is related to the interface Xxx_ConditionCheckRead.

(2)DcmDspDataFreezeCurrentStateFnc:

Function name to request to application to freeze the current state of an IOControl. (FreezeCurrentState-

function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*" and SIGNAL and UDS Service *InputOutputControlByIdentifier* is configured.

This parameter is related to the interface Xxx_FreezeCurrentState.

(3)DcmDspDataReadDataLengthFnc:

Function name to request from application the data length of a DID. (ReadDataLength-function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*" and *DcmDspDataFixedLength == TRUE*.

This parameter is related to the interface Xxx_ReadDataLength.

(4)DcmDspDataReadFnc:

Function name to request from application the data value of a DID. (ReadData-function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*".

This parameter is related to the interface Xxx_ReadData.

(5)DcmDspDataResetToDefaultFnc:

Function name to request to application to reset an IOControl to default value. (ResetToDefault-function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*" and SIGNAL and UDS Service *InputOutputControlByIdentifier* is configured.

This parameter is related to the interface Xxx_ResetToDefault.

(6)DcmDspDataReturnControlToEcuFnc:

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*" and SIGNAL and UDS Service *InputOutputControlByIdentifier* is configured.

(7)DcmDspDataShortTermAdjustmentFnc:

Function name to request to application to return control to ECU of an IOControl. (ReturnControlToECU-function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*" and SIGNAL and UDS Service *InputOutputControlByIdentifier* is configured.

This parameter is related to the interface Xxx_ReturnControlToECU.

(8)DcmDspDataWriteFnc:

Function name to request application to write the data value of a DID. (WriteData-function).

Only relevant if DcmDspDataUsePort=="*USE_DATA_SYNCH_FNC* or DcmDspDataUsePort==*USE_DATA_ASYNCH_FNC*".

This parameter is related to the interface Xxx_WriteData.

(9)DcmDspDataReadEcuSignal:

Function name for read access to a certain ECU Signal by the DCM. (IoHwAb_Dcm_Read<EcuSignalName>-function).

Only relevant if DcmDspDataUsePort==USE_ECU_SIGNAL and UDS Service *InputOutputControlByIdentifier* is configured.

(10)DcmDspDataSize:

Length of data in bits associated to the Data. If Data has variable datalength, that corresponds to the

maximum datalength.

Note: bit type not supported. In case of byte, bit type means data range beteen 1 and 7.

(11)DcmDspDataType:

Provide the data type of Data belonging to a DID.

SINT16

SINT32

SINT8

UINT16

UINT32

UINT8

Note: UINT8 support only

(12)DcmDspDataUsePort:

Define wich interface shall be used to access the data.

USE_BLOCK_ID

USE_DATA_ASYNCH_CLIENT_SERVER

USE_DATA_ASYNCH_FNC

USE_DATA_SENDER_RECEIVER

USE_DATA_SYNCH_CLIENT_SERVER

USE_DATA_SYNCH_FNC

USE_ECU_SIGNAL

Note: USE_DATA_SENDER_RECEIVER, USE_ECU_SIGNAL 미지원

(13)DcmDspDataInfoRef:

Reference to DcmDspDataInfo

(14)DcmDspDataBlockIdRef:

NRAM blockId to access the data. Reference to [NvMBlockDescriptor]

Only relevant if DcmDspDataUsePort==USE_BLOCK_ID.

<Data array type overview>

	STATIC, VARIABLE
	[8-8*N]
DcmDspDataSize	(size MOD 8) == 0
DcmDspDidDataPos	(size MOD 8) == 0
DcmDspDataType	UINT8
Port	C/S FNC(C/S)
resulting ImpType	DataArrayUint8_{Data}

*C/S,FNC: Client Server Interface

7.1.5.3 DcmDspDataInfo

Parameter Name	Value	Category
DcmDspDataFixedLength(1)	User Defined	C
DcmDspDataScalingInfoSize(2)	User Defined	C

(1) DcmDspDataFixedLength:

Indicates if the datalength of the Data is fixed true = datalength of the Data is fixed false = datalength of the Data is variable

(2) DcmDspDataScalingInfoSize:

If Scaling information service is available for this Data, it provides the size of the scaling information.

7.1.5.4 DcmDspDid

Parameter Name	Value	Category
DcmDspDidIdentifier(1)	User Defined	C
DcmDspDidUsed(2)	User Defined	C
DcmDspDidInfoRef(3)	User Defined	C
DcmDspDidRef(4)	User Defined	C

Parameter Name	Value	Category
DcmDspDidPreConfigured(AUTOEVER specific)		N
DcmDspDidRoeQueueEnabled		N

(1) DcmDspDidIdentifier:

2 byte Identifier of the DID. All DcmDspDidIdentifier values shall be unique.

(2) DcmDspDidUsed:

Allow to activate or deactivate the usage of a DID, for multi purpose ECUs

true = DID available

false = DID not available

(3) DcmDspDidInfoRef

Reference to DcmDspDidInfo containing information on this DID.

(4) DcmDspDidRef

Reference to DcmDspDid in case this DID refer to one or serveral other DID's

If the requested DID references other DID using DcmDspDidRef, the DCM module shall process the verification and the reading of every referenced DID and concatenate the response data without any gaps based on the sequence in the configuration

7.1.5.4.1 DcmDspDidSignal

Parameter Name	Value	Category
DcmDspDidDataPos(1)	User Defined	C
DcmDspDidDataRef(2)	User Defined	C
DcmDspDidSignalEndianness		N

(1) DcmDspDidDataPos:

Defines the position of the data defined by DcmDspDidDataRef reference to DcmDspData container in the DID. The position is defined in bits.

(2) DcmDspDidDataRef:

Reference to 1 DcmDspData container relevant for this DID.

7.1.5.5 DcmDspPeriodicTransmission

Parameter Name	Value	Category
DcmDspPeriodicTransmissionSlowRate		N
DcmDspPeriodicTransmissionMediumRate		N
DcmDspPeriodicTransmissionFastRate		N

7.1.5.6 DcmDspDidRange

Parameter Name	Value	Category
DcmDspDidRangeHasGaps(1)	User Defined	C
DcmDspDidRangeIdentifierLowerLimit(2)	User Defined	C
DcmDspDidRangeIdentifierUpperLimit(3)	User Defined	C
DcmDspDidRangeIsDidAvailableFnc(4)	User Defined	C
DcmDspDidRangeMaxDataLength(5)	User Defined	C
DcmDspDidRangeReadDidFnc(6)	User Defined	C
DcmDspDidRangeUsePort(7)	User Defined	C
DcmDspDidRangeWriteDidFnc(8)	User Defined	C
DcmDspDidRangeInfoRef(9)	User Defined	C

(1) DcmDspDidRangeHasGaps:

Parameter specifying if there are gaps in the DID range (parameter set to TRUE) or not (parameter set to FALSE)

(2) DcmDspDidRangeIdentifierLowerLimit

Lower limit of DID range

(3) DcmDspDidRangeIdentifierUpperLimit:

Upper limit of DID range.

(4) DcmDspDidRangeIsDidAvailableFnc:

Function name to request from application if a specific DID is available within the range or not. Only relevant if DcmDspDidRangeUsePort is set to false. This parameter is related to the interface Xxx_IsDidAvailable.

(5) DcmDspDidRangeMaxDataLength:

Maximum data length in bytes.

(6) DcmDspDidRangeReadDidFnc:

Function name to request from application the data range value of a DID.(ReadData-function). Only relevant if DcmDspDidRangeUsePort is set to false. This parameter is related to the interface Xxx_ReadDidData.

(7) DcmDspDidRangeUsePort:

When the parameter DcmDspDidRangeUsePort is set to true the DCM will access the Data using an R-Port requiring a PortInteface DataServices_DIDRange. In that case, DcmDspDidRangeIsDidAvailableFnc, DcmDspDidRangeReadDidFnc and DcmDspDidRangeWriteDidFnc are ignored and the RTE APIs are used.

Note: When the parameter DcmDspDidRangeUsePort is false, the DCM calls the functions defined in DcmDspDidRangeIsDidAvailableFnc, DcmDspDidRangeReadDidFnc and DcmDspDidRangeWriteDidFnc.

(8) DcmDspDidRangeWriteDidFnc:

Function name to request application to write the data range value of a DID.(WriteData-function). Only relevant if DcmDspDidRangeUsePort is set to false. This parameter is related to the interface Xxx_WriteDidData.

(9) DcmDspDidRangeInfoRef:

Reference to DcmDspDidInfo containing information on this DID Range.

7.1.5.7 DcmDspExtRoe

Not supported

7.1.5.8 DcmDspDidInfo

Parameter Name	Value	Category
DcmDspDidDynamicallyDefined(1)	User Defined	C

(1) DcmDspDidDynamicallyDefined:

Indicates if this DID can be dynamically defined true = DID can be dynamically defined false = DID can not be dynamically defined

7.1.5.8.1 DcmDspDidAccess

Sub Container(s)	Value	Category
DcmDspDidControl(1)	User Defined	C
DcmDspDidRead(2)	User Defined	C
DcmDspDidWrite(3)	User Defined	C

(1) DcmDspDidControl:

This container contains the configuration (parameters) of the DID control.

(2) DcmDspDidRead:

This container contains the configuration (parameters) of the DID read

(3) DcmDspDidWrite:

This container contains the configuration (parameters) of the DID write.

7.1.5.8.2 DcmDspDidControl

This container contains the configuration of the InputOutputControlByIdentifier service.

Parameter Name	Value	Category
DcmDspDidFreezeCurrentState(1)	User Defined	C
DcmDspDidResetToDefault(2)	User Defined	C

Parameter Name	Value	Category
DcmDspDidReturnControlToEcu(3)	User Defined	C
DcmDspDidShortTermAdjustment(4)	User Defined	C
DcmDspDidControlSecurityLevelRef(5)	User Defined	C
DcmDspDidControlSessionRef(6)	User Defined	C
DcmDspDidControlModeRuleRef		N

(1) DcmDspDidFreezeCurrentState:

This indicates the presence of "FreezeCurrentState".

(2) DcmDspDidResetToDefault:

This indicates the presence of "ResetToDefault".

(3) DcmDspDidReturnControlToEcu:

This indicates the presence of "ReturnControlToEcu"

(4) DcmDspDidShortTermAdjustment:

This indicates the presence of "ShortTermAdjustment".

(5) DcmDspDidControlSecurityLevelRef:

Reference to DcmDspSecurityRow

Security levels allowed to control this DID. If there is no reference, no check of security level shall be done.

(6) DcmDspDidControlSessionRef:

Reference to DcmDspSessionRow

Sessions allowed to control this DID. If there is no reference, no check of session level shall be done.

7.1.5.8.3 DcmDspDidRead

Parameter Name	Value	Category
DcmDspDidReadSecurityLevelRef(1)	User Defined	C

Parameter Name	Value	Category
DcmDspDidReadSessionRef(2)	User Defined	C
DcmDspDDDIDMaxElements(3)		N
DcmDspDidReadModeRuleRef		N

(1) DcmDspDidReadSecurityLevelRef:

Reference to DcmDspSecurityRow

Security levels allowed to read this DID. If there is no reference, no check of security level shall be done.

(2) DcmDspDidReadSessionRef:

Reference to DcmDspSessionRow

Sessions allowed to read this DID. If there is no reference, no check of session level shall be done.

(3) DcmDspDDDIDMaxElements:

Maximum number of source elements of a DDDID(Dynamically Defined Data IDentifier)

7.1.5.8.4 DcmDspDidWrite

Parameter Name	Value	Category
DcmDspDidWriteSecurityLevelRef(1)	User Defined	C
DcmDspDidWriteSessionRef(2)	User Defined	C
DcmDspDidWriteModeRuleRef		N

(1) DcmDspDidWriteSecurityLevelRef:

Reference to DcmDspSecurityRow

Security levels allowed to write this DID. If there is no reference, no check of security level shall be done.

(2) DcmDspDidWriteSessionRef:

Reference to DcmDspSessionRow

Sessions allowed to write this DID. If there is no reference, no check of session level shall be done.

7.1.5.9 DcmDspMemory

Parameter Name	Value	Category
DcmDspUseMemoryId		N

Note: The memory id is not supported(HMC ES95486-00)

Sub Container(s)	Value	Category
DcmDspAddressAndLengthFormatIdentifier(1)	User Defined	C
DcmDspMemoryIdInfo(2)	User Defined	C

(1) DcmDspAddressAndLengthFormatIdentifier:

This container contains the configuration of the supported AddressAndLengthFormatIdentifiers for memory access.

(2) DcmDspMemoryIdInfo:

Provides the value of memory identifier used to select the desired memory device.

This container contains the configuration of the memory access requested through diagnostic services : ReadMemoryByAddress, WriteMemoryByAddress, RequestDownload, RequestUpload. (In the case of RequestDownload and RequestUpload, the user must directly implement the User Callout that is called when a range check for the memory address is required.)

7.1.5.9.1 DcmDspMemoryIdInfo

Parameter Name	Value	Category
DcmDspMemoryIdValue		N

Note: The memory id is not supported(HMC ES95486-00)

Sub Container(s)	Value	Category
DcmDspReadMemoryRangeInfo(1)	User Defined	C
DcmDspWriteMemoryRangeInfo(2)	User Defined	C

(1) DcmDspReadMemoryRangeInfo:

Provides the range of memory address allowed for reading.

(2) DcmDspWriteMemoryRangeInfo:

Provides the range of memory address allowed for writting.

DcmDspReadMemoryRangeInfo

Parameter Name	Value	Category
DcmDspReadMemoryRangeHigh(1)	User Defined	C
DcmDspReadMemoryRangeLow(2)	User Defined	C
DcmDspReadMemoryRangeSecurityLevelRef(3)	User Defined	C
DcmDspReadMemoryRangeModeRuleRef		N

(1) DcmDspReadMemoryRangeHigh:

High memory address of a range allowed for reading

(2) DcmDspReadMemoryRangeLow:

Low memory address of a range allowed for reading

(3) DcmDspReadMemoryRangeSecurityLevelRef:

Link to the Security Access Levels needed for read access on this memory address. If there is no reference, no check of security level shall be done.

DcmDspWriteMemoryRangeInfo

Parameter Name	Value	Category
DcmDspWriteMemoryRangeHigh(1)	User Defined	C
DcmDspWriteMemoryRangeLow(2)	User Defined	C
DcmDspWriteMemoryRangeSecurityLevelRef(3)	User Defined	C
DcmDspWriteMemoryRangeModeRuleRef		N

(1) DcmDspWriteMemoryRangeHigh:

High memory address of a range allowed for writting.

(2) DcmDspWriteMemoryRangeLow:

Low memory address of a range allowed for writing

(3) DcmDspWriteMemoryRangeSecurityLevelRef:

Link to the Security Access Levels needed for write access on this memory address. If there is no reference, no check of security level shall be done.

7.1.5.9.2 DcmDspAddressAndLengthFormatIdentifier

Parameter Name	Value	Category
DcmDspSupportedAddressAndLengthFormatIdentifier(1)	User Defined	C

(1) DcmDspSupportedAddressAndLengthFormatIdentifier:

This parameter defines the supported AddressAndLengthFormatIdentifier of the request message.

Note: The high nibble of Address and length Format Identifier (Number of bytes for Memory size) shall not exceed 4.

7.1.5.10 DcmDspPid

Parameter Name	Value	Category
DcmDspPidIdentifier	User Defined	C
DcmDspPidSize	User Defined	C
DcmDspPidUsed	User Defined	C
DcmDspPidService	User Defined	C

Sub Container(s)	Value	Category
DcmDspPidData	User Defined	C
DcmDspPidSupportInfo	User Defined	C

7.1.5.10.1 DcmDspPidData

Parameter Name	Value	Category
DcmDspPidDataPos	User Defined	C
DcmDspPidSignalEndianness	User Defined	C
DcmDspPidDataType	User Defined	C

Parameter Name	Value	Category
DcmDspPidDataSize	User Defined	C

Sub Container(s)	Value	Category
DcmDspPidDataSupportInfo	User Defined	C
DcmDspPidService01	User Defined	C
DcmDspPidService02	User Defined	C

7.1.5.10.2 DcmDspPidDataSupportInfo

Parameter Name	Value	Category
DcmDspPidDataSupportInfoBit	User Defined	C
DcmDspPidDataSupportInfoRef	User Defined	C

7.1.5.10.3 DcmDspPidService01

Parameter Name	Value	Category
DcmDspPidDataReadFnc	User Defined	C
DcmDspPidDataUsePort	User Defined	C

7.1.5.10.4 DcmDspPidService02

Parameter Name	Value	Category
DcmDspPidDataDemRef	User Defined	C

7.1.5.10.5 DcmDspPidSupportInfo

Parameter Name	Value	Category
DcmDspPidSupportInfoLen	User Defined	C
DcmDspPidSupportInfoPos	User Defined	C

7.1.5.11 DcmDspRequestControl

Parameter Name	Value	Category
DcmDspRequestControlInBufferSize	User Defined	C
DcmDspRequestControlOutBufferSize	User Defined	C
DcmDspRequestControlTestId	User Defined	C
DcmDspRequestControlFnc	User Defined	C

7.1.5.12 DcmDspRoe

Parameter Name	Value	Category
DcmDspRoeBufSize	-	N
DcmDspRoeInitOnDSC	-	N
DcmDspRoeInterMessageTime	-	N
DcmDspRoeMaxNumberOfRetry	-	N
DcmDspRoeMaxEventLength	-	N
DcmDspRoeQueueEnabled	-	N
DcmDspRoeStopFnc	-	N
DcmDspRoeInitFnc	-	N
DcmDspRoeMaxQueueLength	-	N
DcmDspRoeBlockIdRef	-	N

7.1.5.13 DcmDspRoutine

Parameter Name	Value	Category
DcmDspRequestResultsRoutineFnc(1)	User Defined	C
DcmDspRoutineFixedLength(2)	User Defined	C
DcmDspRoutineIdentifier(3)	User Defined	C
DcmDspRoutineUsePort(4)	User Defined	C

Parameter Name	Value	Category
DcmDspRequestResultsRoutineSupported(5)	User Defined	C
DcmDspRoutineUsed(6)	User Defined	C
DcmDspStopRoutineSupported(7)	User Defined	C
DcmDspStartRoutineFnc(8)	User Defined	C
DcmDspStopRoutineFnc(9)	User Defined	C
DcmDspRoutineInfoRef(10)	User Defined	C

(1) DcmDspRequestResultsRoutineFnc:

Function name for request to application the results of a routine. (Routine_RequestResults-function)

This parameter is related to the interface Xxx_RequestResults.

(2) DcmDspRoutineFixedLength:

Indicates if the datalength of the optional record in the RoutineControl request and response is fixed.

true = datalength of the optional record is fixed

false = datalength of the optional record is variable.

Note: In case DcmDspRoutineFixedLength is set to FALSE, the DcmDspRoutineSignalLength for the last signal is the maximum length (in bits) of the optional record.

(3) DcmDspRoutineIdentifier:

2 bytes Identifier of the RID.

All DcmDspRoutineIdentifier values shall be unique.

(4) DcmDspRoutineUsePort

If this parameter is set to true, the DCM uses a port requiring a PortInterface RoutineServices_<ROUTINENAME>. The R-Port is named RoutineServices_<ROUTINENAME> where <ROUTINENAME> is the name of the container DcmDspRoutine In that case, the configuration must not provide function names in DcmDspStartRoutineFnc, DcmDspStopRoutineFnc or DcmDspRequestResultsRoutineFnc.

Note: If this is false, the DCM expects to find the names of the functions to be used in DcmDspStartRoutineFnc, DcmDspStopRoutineFnc or DcmDspRequestResultsRoutineFnc.

(5) DcmDspRequestResultsRoutineSupported:

Indicates if the optional requestRoutineResults in the RoutineControl is supported.

true = requestRoutineResults is supported.

false = requestRoutineResults is not supported.

(6) DcmDspRoutineUsed:

Allow to activate or deactivate the usage of a Routine, for multi purpose.

true = Routine available ECUs.

false = Routine not available.

(7) DcmDspStopRoutineSupported:

Indicates if the optional stopRoutine in the RoutineControl is supported.

true = stopRoutine is supported.

false = stopRoutine is not supported.

(8) DcmDspStartRoutineFnc:

Function name for request to application to start a routine. (Routine_Start-function)

This parameter is related to the interface Xxx_Start.

(9) DcmDspStopRoutineFnc:

Function name for request to application to stop a routine. (Routine_Stop-function)

This parameter is related to the interface Xxx_Stop.

(10) DcmDspRoutineInfoRef:

Reference to DcmDspRoutineInfo containing information on this routine.

7.1.5.14 DcmDspRoutineInfo

Sub Container(s)	Value	Category
DcmDspRoutineAuthorization(1)	User Defined	C
DcmDspRoutineRequestResOut(2)	User Defined	C
DcmDspRoutineStopIn(3)	User Defined	C
DcmDspRoutineStopOut(4)	User Defined	C
DcmDspStartRoutineIn(5)	User Defined	C
DcmDspStartRoutineOut(6)	User Defined	C

(1) DcmDspRoutineAuthorization:

This container contains the configuration (parameters) for the Routine Authorization. (Security, Session)

(2) DcmDspRoutineRequestResOut:

Provide description of output parameter of RequestResult subservice for RoutineControl service.

(3) DcmDspRoutineStopIn:

Provide description of input parameter of Stop subservice for RoutineControl service.

(4) DcmDspRoutineStopOut:

Provide description of output parameter of Stop subservice for RoutineControl service.

(5) DcmDspStartRoutineIn:

Provide description of input parameter of Start subservice for RoutineControl service.

(6) DcmDspStartRoutineOut:

Provide description of output parameter of Start subservice for RoutineControl service.

7.1.5.14.1 DcmDspRoutineAuthorization

Parameter Name	Value	Category
DcmDspRoutineSecurityLevelRef(1)	User Defined	C
DcmDspRoutineSessionRef(2)	User Defined	C

Parameter Name	Value	Category
DcmDspRoutineModeRuleRef		N

(1) DcmDspRoutineSecurityLevelRef:

Reference to DcmDspSecurityRow Security levels allowed to control this RID. If there is no reference, no check of security level shall be done.

(2) DcmDspRoutineSessionRef:

Reference to DcmDspSessionRow Sessions allowed to control this RID. If there is no reference, no check of session level shall be done.

7.1.5.14.2 DcmDspRoutineRequestResOut

Provide description of output parameter of RequestResult subservice for RoutineControl service

Sub Container(s)	Value	Category
DcmDspRoutineRequestResOutSignal(1)	User Defined	C

(1) DcmDspRoutineRequestResOutSignal:

Provide description of a routine signal used in RoutineControl service.

DcmDspRoutineRequestResOutSignal

Parameter Name	Value	Category
DcmDspRoutineSignalLength(1)	User Defined	C
DcmDspRoutineSignalPos(2)	User Defined	C
DcmDspRoutineSignalType(3)	User Defined	C
DcmDspRequestRoutineResultsRole	User Defined	C
DcmDspRoutineRequestEndianness		N

(1) DcmDspRoutineSignalLength:

Provide the length in bits of the signal in the RoutineControl request/response

(2) DcmDspRoutineSignalPos:

Provide the position of the signal in the RoutineControl request/response. The position is defined in bits. The value of the parameter should be configured a multiple of 〈8〉

(3) DcmDspRoutineSignalType:

Provide the type of the signal in the RoutineControl request/response.

BOOLEAN	Not supported
SINT16	type of the signal is sint16. 〈Not Supported yet〉
SINT32	type of the signal is sint32. 〈Not Supported yet〉
SINT8	type of the signal is sint8. 〈Not Supported yet〉
UINT16	type of the signal is uint16.
UINT32	type of the signal is uint32.
UINT8	type of the signal is uint8.
VARIABLE_LENGTH	type of the signal is uint8[(DcmDspRoutineSignalLength+7)/8]. This is only valid for the last signal and when DcmDspRoutineFixedLength is set to FALSE.

(4) DcmDspRequestRoutineResultsRole:

Provide the Role in the RoutineControl Results request/response

7.1.5.14.3 DcmDspRoutineStopIn

Provide description of input parameter of Stop subservice for RoutineControl service.

Sub Container(s)	Value	Category
DcmDspRoutineStopInSignal	User Defined	C

DcmDspRoutineStopInSignal

Provide description of a routine signal used in RoutineControl service.

Parameter Name	Value	Category
DcmDspRoutineSignalLength(1)	User Defined	C
DcmDspRoutineSignalPos(2)	User Defined	C
DcmDspRoutineSignalType(3)	User Defined	C
DcmDspRoutineStopInEndianness		N

(1) DcmDspRoutineSignalLength:

Provide the length in bits of the signal in the RoutineControl request/response.

(2) DcmDspRoutineSignalPos:

Provide the position of the signal in the RoutineControl request/response. The position is defined in bits.

The value of the parameter should be configured a multiple of 〈8〉

(3) DcmDspRoutineSignalType:

BOOLEAN	Not supported
SINT16	type of the signal is sint16. 〈Not Supported yet〉
SINT32	type of the signal is sint32. 〈Not Supported yet〉
SINT8	type of the signal is sint8. 〈Not Supported yet〉
UINT16	type of the signal is uint16.
UINT32	type of the signal is uint32.
UINT8	type of the signal is uint8.
VARIABLE_LENGTH	type of the signal is uint8[(DcmDspRoutineSignalLength+7)/8]. This is only valid for the last signal and when DcmDspRoutineFixedLength is set to FALSE.

7.1.5.14.4 DcmDspRoutineStopOut

Provide description of output parameter of Stop subservice for RoutineControl service.

Sub Container(s)	Value	Category
DcmDspRoutineStopOutSignal	User Defined	C

DcmDspRoutineStopOutSignal

Parameter Name	Value	Category
DcmDspRoutineSignalLength(1)	User Defined	C
DcmDspRoutineSignalPos(2)	User Defined	C
DcmDspRoutineSignalType(3)	User Defined	C
DcmDspStopRoutineRole(4)	User Defined	C
DcmDspRoutineStopOutEndianness		N

(1) DcmDspRoutineSignalLength:

Provide the length in bits of the signal in the RoutineControl request/response.

(2) DcmDspRoutineSignalPos:

Provide the position of the signal in the RoutineControl request/response. The position is defined in bits.

The value of the parameter should be configured a multiple of 〈8〉

(3) DcmDspRoutineSignalType:

BOOLEAN	Not supported
SINT16	type of the signal is sint16. 〈Not Supported yet〉
SINT32	type of the signal is sint32. 〈Not Supported yet〉
SINT8	type of the signal is sint8. 〈Not Supported yet〉
UINT16	type of the signal is uint16.
UINT32	type of the signal is uint32.
UINT8	type of the signal is uint8.
VARIABLE_LENGTH	type of the signal is uint8[(DcmDspRoutineSignalLength+7)/8]. This is only valid for the last signal and when DcmDspRoutineFixedLength is set to FALSE.

(4) DcmDspStopRoutineRole:

Provide the Role in the RoutineControl Stop request/response

7.1.5.14.5 DcmDspStartRoutineIn

Provide description of input parameter of Start subservice for RoutineControl service

Sub Container(s)	Value	Category
DcmDspStartRoutineInSignal	User Defined	C

DcmDspStartRoutineInSignal

Parameter Name	Value	Category
DcmDspRoutineSignalLength(1)	User Defined	C
DcmDspRoutineSignalPos(2)	User Defined	C

Parameter Name	Value	Category
DcmDspRoutineSignalType[3]	User Defined	C
DcmDspRoutineStartInEndianness		N

(1) DcmDspRoutineSignalLength:

Provide the length in bits of the signal in the RoutineControl request/response.

(2) DcmDspRoutineSignalPos:

Provide the position of the signal in the RoutineControl request/response. The position is defined in bits.

The value of the parameter should be configured a multiple of 〈8〉

(3) DcmDspRoutineSignalType:

BOOLEAN	Not supported
SINT16	type of the signal is sint16. 〈Not Supported yet〉
SINT32	type of the signal is sint32. 〈Not Supported yet〉
SINT8	type of the signal is sint8. 〈Not Supported yet〉
UINT16	type of the signal is uint16.
UINT32	type of the signal is uint32.
UINT8	type of the signal is uint8.
VARIABLE_LENGTH	type of the signal is uint8[(DcmDspRoutineSignalLength+7)/8]. This is only valid for the last signal and when DcmDspRoutineFixedLength is set to FALSE.

7.1.5.14.6 DcmDspStartRoutineOut

Provide description of output parameter of Start subservice for RoutineControl service.

Sub Container(s)	Value	Category
DcmDspStartRoutineOutSignal	User Defined	C

DcmDspStartRoutineOutSignal

Parameter Name	Value	Category
DcmDspRoutineSignalLength[1]	User Defined	C
DcmDspRoutineSignalPos[2]	User Defined	C

Parameter Name	Value	Category
DcmDspRoutineSignalType[3]	User Defined	C
DcmDspStartRoutineRole	User Defined	C
DcmDspRoutineStartOutEndianness		N

(1) DcmDspRoutineSignalLength:

Provide the length in bits of the signal in the RoutineControl request/response.

(2) DcmDspRoutineSignalPos:

Provide the position of the signal in the RoutineControl request/response. The position is defined in bits.

The value of the parameter should be configured a multiple of 〈8〉

(3) DcmDspRoutineSignalType:

BOOLEAN	Not supported
SINT16	type of the signal is sint16. 〈Not Supported yet〉
SINT32	type of the signal is sint32. 〈Not Supported yet〉
SINT8	type of the signal is sint8. 〈Not Supported yet〉
UINT16	type of the signal is uint16.
UINT32	type of the signal is uint32.
UINT8	type of the signal is uint8.
VARIABLE_LENGTH	type of the signal is uint8[(DcmDspRoutineSignalLength+7)/8]. This is only valid for the last signal and when DcmDspRoutineFixedLength is set to FALSE.

(4) DcmDspStartRoutineRole:

Provide the Role in the RoutineControl Start request/response

7.1.5.15 DcmDspSecurity

This container contains the configuration (DSP parameter) for security level configuration (per security level)

Description This container contains Rows of DcmDspSecurityRow

Parameter Name	Value	Category
DcmDspSecurityMaxAttemptCounterReadoutTime(1)	User Defined	C

(1) DcmDspSecurityMaxAttemptCounterReadoutTime:

Delay, in seconds, from startup (measured from the first call of the Dcm_MainFunction()), allowed for all AttemptCounter values to be obtained from the Application. Must be a multiple of the DcmTaskTime.

min: A value equal to the DcmTaskTime

Sub Container(s)	Value	Category
DcmDspSecurityRow	User Defined	C

7.1.5.15.1 DcmDspSecurityRow

Definition of a single Row of configuration for security level configuration (per security level) The name of this container is used to define the name of the R-Port through which the DCM accesses the interface SecurityAccess_<LEVEL>. The R-Port is named SecurityAccess_<LEVEL> where _<LEVEL> is the name of the container DcmDspSecurityRow. If there is no reference, no check of security level shall be done.

Parameter Name	Value	Category
DcmDspSecurityDelayTime	User Defined	C
DcmDspSecurityKeySize	User Defined	C
DcmDspSecurityLevel	From SRS	F
DcmDspSecurityNumAttDelay	User Defined	C
DcmDspSecuritySeedSize	User Defined	C
DcmDspSecurityGetSeedFnc(1)	User Defined	C
DcmDspSecurityUsePort(2)	User Defined	C
DcmDspSecurityGetCompareFnc(3)	User Defined	C
DcmDspSecurityADRSize	User Defined	C
DcmDspSecurityDelayTimeOnBoot(4)		N
DcmDspSecurityAttemptCounterEnabled(5)	User Defined	C

Parameter Name	Value	Category
DcmDspSecurityGetAttemptCounterFnc(6)	User Defined	C
DcmDspSecuritySetAttemptCounterFnc(7)	User Defined	C

Note: CSAC 알고리즘을 사용하는 경우 (1), (2), (3)은 고정된 설정 사용.

Note : (4) Not supported in ES specification

(5) DcmDspSecurityAttemptCounterEnabled:

This configuration parameter controls the existence of the APIs to set/get the attempt counter values towards application(Xxx_SetSecurityAttemptCounter()/Xxx_GetSecurityAttemptCounter()).

In case of enabled, the security attempt counter values are passed to application, whenever there is a change in the value. This allows storing the values in nonvolatile RAM and restoring them at ECU startup.

(6) DcmDspSecurityGetAttemptCounterFnc:

Function name to request the value of an attempt counter. This parameter is related to the interface Xxx_ GetSecurityAttemptCounter

(7) DcmDspSecuritySetAttemptCounterFnc:

Function name to set the value of an attempt counter. This parameter is related to the interface Xxx_ SetSecurityAttemptCounter.

Note : (2) (5) (6) (7)

If (DcmDspSecurityAttemptCounterEnabled == TRUE) && (DcmDspSecurityUsePort == USE_ASYNCH_CLIENT_SERVER), Xxx_GetSecurityAttemptCounter()/Xxx_SetSecurityAttemptCounter() are generated as operations in the SecurityAccess_{SecurityLevel} Client-Server-Interface.

else If (DcmDspSecurityAttemptCounterEnabled == TRUE) && (DcmDspSecurityUsePort == USE_ASYNCH_FNC), Xxx_GetSecurityAttemptCounter()/Xxx_SetSecurityAttemptCounter() are generated as functions set in DcmDspSecurityGetAttemptCounterFnc/ DcmDspSecuritySetAttemptCounterFnc.

7.1.5.16 DcmDspSession

This container contains the configuration (DSP parameter) session control configuration (per session control) This container contains Rows of DcmDspSessionRow.

Sub Container(s)	Value	Category
DcmDspSessionRow	From SRS	F

7.1.5.16.1 DcmDspSessionRow

Parameter Name	Value	Category
DcmDspSessionForBoot		C
DcmDspSessionLevel	From SRS	F
DcmDspSessionP2ServerMax	0.05	F
DcmDspSessionP2StarServerMax	5.0	F

7.1.5.17 DcmDspTestResultByObdmid

Sub Container(s)	Value	Category
DcmDspTestResultObdmidTid	User Defined	C
DcmDspTestResultTid	User Defined	C

7.1.5.17.1 DcmDspTestResultByObdmidTid

Sub Container(s)	Value	Category
DcmDspTestResultObdmidTids	User Defined	C

7.1.5.17.2 DcmDspTestResultObdmidTids

Parameter Name	Value	Category
DcmDspTestResultObdmidTidUaSid	User Defined	C
DcmDspTestResultObdmidTidRef	User Defined	C

7.1.5.17.3 DcmDspTestResultTid

Parameter Name	Value	Category
DcmDspTestResultTestId	User Defined	C

7.1.5.18 DcmDspVehInfo

Parameter Name	Value	Category
DcmDspVehInfoInfoType	User Defined	C

Sub Container(s)	Value	Category
DcmDspVehInfoData	User Defined	C

7.1.5.18.1 DcmDspVehInfoData

Parameter Name	Value	Category
DcmDspVehInfoDataOrder	User Defined	C
DcmDspVehInfoDataSize	User Defined	C
DcmDspVehInfoDataUsePort	User Defined	C
DcmDspVehInfoDataReadFnc	User Defined	C

7.1.5.19 DcmDspCallbackPresentDate

Container Name	Value	Category
DcmDspCallbackPresentDate (1)	User Defined	C

(1) DcmDspCallbackPresentDate:

The name of this container is used to define the name of the R-Port through which the DCM access the interface CallbackDCMPresentDate.

7.1.5.20 DcmDspAuthentication

This container contains the configuration of Authentication Service. This container contains Rows of DcmDspAuthenticationConnection.

Parameter Name	Value	Category
DcmDspAuthenticationDeauthenticatedRole(1)	User Defined	C

Parameter Name	Value	Category
DcmDspAuthenticationDataBufferLength[2]	User Defined	C
DcmDspAuthenticationDefaultSessionTimeOut[3]	User Defined	C
DcmDspAuthenticationAsyncTimeOut[4]	User Defined	C
DcmDspAuthenticationRoleSize[5]	1	F
DcmDspAuthenticationWhiteListServicesMaxSize[6]	User Defined	C
DcmDspAuthenticationWhiteListDIDMaxSize[7]	User Defined	C
DcmDspAuthenticationWhiteListRIDMaxSize[8]	User Defined	C
DcmDspAuthenticationWhiteListMemorySelectionMaxSize[9]	User Defined	C
DcmDspAuthenticationGeneralNRCModeRuleRef	-	N
DcmDspAuthenticationPersistStateModeRuleRef	-	N
DcmDspAuthenticationPersitStateNvMBlockIdRef	-	N

(1) DcmDspAuthenticationDeauthenticatedRole:
Role used for service authentication verification in the deauthenticated state.

(2) DcmDspAuthenticationDataBufferLength
The maximum returned data length when Dcm call Csm_RandomGenerate, KeyM_GetCertificate and Csm_SignatureGenerate

(3) DcmDspAuthenticationDefaultSessionTimeOut
The configuration number of seconds after which the Dcm makes a transition to deauthenticated state, in case of no active communication.

(4) DcmDspAuthenticationAsyncTimeOut
The configuration number of seconds waiting time after Dcm call an asynchronous function (KeyM and Csm).

(5) DcmDspAuthenticationRoleSize
Defines the size in bytes for the role element within a certificate.
This configuration maximum size role.

(6) DcmDspAuthenticationWhiteListServicesMaxSize
Defines the maximum size in bytes for the white list element within a certificate.
Maximum white list service data which get by call KeyM API.

(7) DcmDspAuthenticationWhiteListDIDMaxSize
Defines the maximum size in bytes for the white list element within a certificate.
Maximum white list DID data which get by call KeyM API.

(8) DcmDspAuthenticationWhiteListRIDMaxSize
Defines the maximum size in bytes for the white list element within a certificate.
Maximum white list RID data which get by call KeyM API.

(9) DcmDspAuthenticationWhiteListMemorySelectionMaxSize
Defines the maximum size in bytes for the white list element within a certificate.
Maximum white list Memory Selection data which get by call KeyM API.

Sub Container Name	Value	Category
DcmDspAuthenticationConnection	User Defined	C

7.1.5.20.1 DcmDspAuthenticationConnection

Parameter Name	Value	Category
DcmDspAuthenticationCertificatePublicKeyStoreJobRef (1)	User Defined	C
DcmDspAuthenticationClientCertificateRef (2)	User Defined	C
DcmDspAuthenticationClientChallengeSignJobRef (3)	User Defined	C
DcmDspAuthenticationConnectionCertificateRef (4)	User Defined	C
DcmDspAuthenticationConnectionMainConnectionRef (5)	User Defined	C
DcmDspAuthenticationECUCertificateRef (6)	User Defined	C
DcmDspAuthenticationPublicKeyElementRef (7)	User Defined	C
DcmDspAuthenticationRandomJobRef(8)	User Defined	C
DcmDspAuthenticationRoleElementRef(9)	User Defined	C
DcmDspAuthenticationVerifyProofOfOwnerShip	User Defined	C

Parameter Name	Value	Category
ClientJobRef[10]		
DcmDspAuthenticationWhiteListServicesElementRef[11]	User Defined	C
DcmDspAuthenticationECUCertificateKeyElementRef[12]	User Defined	C
DcmDspAuthenticationWhiteListDIDElementRef[13]	User Defined	C
DcmDspAuthenticationWhiteListMemorySelectionElementRef[14]	User Defined	C
DcmDspAuthenticationWhiteListRIDElementRef[15]	User Defined	C
DcmDspAuthenticationTargetIdentificationModeRuleRef	-	N

(1) DcmDspAuthenticationCertificatePublicKeyStoreJobRef:
Reference to a CsmJob used to store the public key within the Csm.

(2) DcmDspAuthenticationClientCertificateRef:
Reference to a KeyMCertificate used to handle the client certificate for this connection.
This configuration reference to a KeyMCertificateId
Dcm will call KeyM_CertElementGetFirst with certId = DcmDspAuthenticationClientCertificateRef

(3) DcmDspAuthenticationClientChallengeSignJobRef
Reference to a job used to sign the client challenge.
This configuration reference to a CsmJobId
Dcm will call Csm_SignatureGenerate with jobId = DcmDspAuthenticationClientChallengeSignJobRef

(4) DcmDspAuthenticationConnectionCertificateRef
Reference to a KeyMCertificate used to store the certificate within the KeyM.
This configuration reference to a KeyMCertificateId
Dcm will call KeyM_SetCertificate with certId = DcmDspAuthenticationConnectionCertificateRef
Dcm will call KeyM_VerifyCertificate with CertificateId = DcmDspAuthenticationConnectionCertificateRef

(5) DcmDspAuthenticationConnectionMainConnectionRef
Reference to the dsl diagnostic connection that uses this authentication configuration

(6) DcmDspAuthenticationECUCertificateRef
Reference to a KeyMCertificate with the server certificate for bi-directional authentication
This configuration reference to a KeyMCertificateId

Dcm will call KeyM_VerifyCertificate with CertificateId = DcmDspAuthenticationECUCertificateRef

(7) DcmDspAuthenticationPublicKeyElementRef
Reference to a certificate data element with the public key in the certificate.

(8) DcmDspAuthenticationRandomJobRef
Reference to a certificate parse job used to parse the authentication certificate.
This configuration reference to a CsmJobId
Dcm will call Csm_RandomGenerate with jobId = DcmDspAuthenticationRandomJobRef

(9) DcmDspAuthenticationRoleElementRef
Reference to a certificate data element with the role in the certificate
This configuration reference to a KeyMCertificateElementId
Dcm will call KeyM_CertElementGet with CertElementId = KeyMCertificateElementId

(10) DcmDspAuthenticationVerifyProofOfOwnerShipClientJobRef
Reference to a CsmJob used to verify the proof of ownership client in the Csm.
This configuration reference to a CsmJobId
Dcm will call Csm_SignatureVerify with jobId = DcmDspAuthenticationVerifyProofOfOwnerShipClientJobRef

(11) DcmDspAuthenticationWhiteListServicesElementRef
Reference to a certificate data element with the white list in the certificate.
This configuration reference to a KeyMCertificateElementId
Dcm will call KeyM_CertElementGetFirst and KeyM_CertElementGetNext with CertElementId = DcmDspAuthenticationWhiteListServicesElementRef

(12) DcmDspAuthenticationECUCertificateKeyElementRef
Reference to a CryptoKeyElement used as server certificate during bi-directional authentication.

(13) DcmDspAuthenticationWhiteListDIDElementRef
Reference to a certificate data element with the white list in the certificate.
This configuration reference to a KeyMCertificateElementId

Dcm will call KeyM_CertElementGetFirst and KeyM_CertElementGetNext with CertElementId = DcmDspAuthenticationWhiteListDIDElementRef

(14) DcmDspAuthenticationWhiteListMemorySelectionElementRef
Reference to a certificate data element with the white list in the certificate.
This configuration reference to a KeyMCertificateElementId
Dcm will call KeyM_CertElementGetFirst and KeyM_CertElementGetNext with CertElementId = DcmDspAuthenticationWhiteListMemorySelectionElementRef

(15) DcmDspAuthenticationWhiteListRIDElementRef
Reference to a certificate data element with the white list in the certificate.
This configuration reference to a KeyMCertificateElementId
Dcm will call KeyM_CertElementGetFirst and KeyM_CertElementGetNext with CertElementId = DcmDspAuthenticationWhiteListRIDElementRef

7.1.5.20.2 DcmDspAuthenticationConnectionES

Parameter Name	Value	Category
DcmDspAuthenticatedRole(1)	User Defined	C
DcmDspAuthenticationWLServicesWithoutSubfunction(2)	User Defined	C
DcmDspAuthenticationWLServicesWithSubfunction (3)	User Defined	C
DcmDspAuthenticationUniDirectionalFunc	User Defined	C
DcmDspAuthenticationProofOfOwnerShipClientFunc	User Defined	C
DcmDspAuthenticationCertificateClientSize	User Defined	C
DcmDspAuthenticationProofOfOwnerShipClientSize	User Defined	C
DcmDspAuthenticationWLDID(4)	User Defined	C
DcmDspAuthenticationWLRID(5)	User Defined	C
DcmDspAuthenticationWhiteListMemorySelection	User Defined	C
DcmDspAuthenticationSettingAccessRighsFaildFunc(6)	User Defined	C
DcmDspAuthenticationDeauthenticationFailedFunc(7)	User Defined	C
DcmDspAuthenticationUsePort	User Defined	C
DcmDspAuthenticationConnectionMainConnectionRef (8)	User Defined	C

(1) DcmDspAuthenticatedRole
Role used for service authentication verification in the authenticated state.

(2) DcmDspAuthenticationWLServicesWithoutSubfunction
If set Service SID Without Subfunction, Service can be used when authenticated state.

(3) DcmDspAuthenticationWLServicesWithSubfunction
If set Service SID With Subfunction, Service can be used when authenticated state.

(4) DcmDspAuthenticationWLDID
If set DID, DID can be used when authenticated state. DID must be set as 3 byte: data identifiers and access information.

(5) DcmDspAuthenticationWLRID
If set RID, RID can be used when authenticated state. RID must be set as 3 byte: data identifiers and access information.

(6) DcmDspAuthenticationSettingAccessRighsFailedFunc
When using NRC 5A, Configure this option when DcmDspAuthenticationUsePort is set as USE_ASYNCH_FNC /USE_SYUNCH_FNC.

(7) DcmDspAuthenticationDeauthenticationFailedFunc
When using NRC 5D, Configure this option when DcmDspAuthenticationUsePort is set as USE_ASYNCH_FNC /USE_SYUNCH_FNC.

(8) DcmDspAuthenticationConnectionMainConnectionRef
Reference to the dsl diagnostic connection that uses this authentication configuration

7.1.5.21 DcmDspReadDTCInformation

Container Name	Value	Category
DcmDspReadDTCInformationSupportedObdUdsDtcSeparation (1)	User Defined	C

(1) DcmDspReadDTCInformationSupportedObdUdsDtcSeparation:

J1979-2 를 사용하는 경우에만 설정한다.
Dem 의 DemSupportedObdUdsDtcSeparation 과 동일하게 설정해야 정상 동작한다.

7.1.5.22 DcmDspRequestFileTransfer

Parameter Name	Value	Category
DcmRequestFileTransferUsePort (1)	User Defined	C
DcmRequestFileTransferFileSizeOrDirInfoParameterLength (2)	User Defined	C
DcmRequestFileTransferLengthFormatIdentifier (3)	User Defined	C
DcmRequestFileTransferMaxFileAndDirName (4)	User Defined	C

(1) DcmRequestFileTransferUsePort:

Defines if a C/S or C function call shall be used for RequestFileTransfer processing.

(2) DcmRequestFileTransferFileSizeOrDirInfoParameterLength:

Defines the length (number of bytes, i.e. the value of fileSizeOrDirInfoParameterLength) of the fileSizeUncompressedOrDirInfoLength and fileSizeCompressed in the response of RequestFileTransfer.

(3) DcmRequestFileTransferLengthFormatIdentifier:

Defines the length (number of bytes) of the maxNumberOfBlockLength parameter in the response of RequestFileTransfer.

(4) DcmRequestFileTransferMaxFileAndDirName:

Defines the maximum size allowed for the FileAndDirName parameter with RTE interfaces used for RequestFileTransfer.

7.1.6 DcmProcessingConditions

Sub Container(s)	Value	Category
DcmModeCondition		N
DcmModeRule		N

7.1.6.1 DcmModeCondition

Parameter Name	Value	Category
DcmConditionType		N
DcmBswModeRef		N
DcmSwcModeRef		N

7.1.6.2 DcmModeRule

Parameter Name	Value	Category
DcmLogicalOperator		N
DcmModeRuleNrcValue		N
DcmArgumentRef		N

8 Application Programming Interface (API)

8.1 Type Definitions

8.1.1 Dcm_StatusType

Name:	Dcm_StatusType	
Type:	uint8	
Range:	DCM_E_OK	0x00
	DCM_E_COMPARE_KEY_FAILED	*0x01*
	DCM_E_TI_PREPARE_LIMITS	0x02
	DCM_E_TI_PREPARE_INCONSTENT	0x03
	DCM_E_SESSION_NOT_ALLOWED	0x04
	DCM_E_PROTOCOL_NOT_ALLOWED	0x05
	DCM_E_ROE_NOT_ACCEPTED	0x06
	DCM_E_PERIODICID_NOT_ACCEPTED	0x07
	DCM_E_REQUEST_NOT_ACCEPTED	0x08
	DCM_E_REQUEST_ENV_NOK	0x09
Description:	Base item type to transport status information.	

8.1.2 Dcm_SecLevelType

Name:	Dcm_SecLevelType		
Type:	uint8		
Range:	DCM_SEC_LEV_LOCKED	0x01	--
	DCM_SEC_LEV_L1	0x02	--
	configuration dependent	0x03	--
	DCM_SAFETY_SYSTEM_DIAGNOSTIC_SESSION	0x04	--
	configuration dependent	0x02...0x7F	(according to "diagnosticSessionType" parameter of DiagnosticSessionControl request)
	Reserved by Document	0x80...0xFE	--
	DCM_SEC_LEV_ALL	0xFF	--

Description:	Security Level type definition

Note : This type is defined in Rte_Dcm_Type.h header file, which is generated by the RTE generator.

8.1.3 Dcm_SesCtrlType

Name:	Dcm_SesCtrlType		
Type:	uint8		
Range:	DCM_DEFAULT_SESSION	0x01	--
	DCM_PROGRAMMING_SESSION	0x02	--
	DCM_EXTENDED_DIAGNOSTIC_SESSION	0x03	--
	DCM_SAFETY_SYSTEM_DIAGNOSTIC_SESSION	0x04	--
	configuration dependent	0x40...0x7E	(according to "diagnosticSessionType" parameter of DiagnosticSessionControl request)
	Reserved by Document	0x7F...0xFE	--
	DCM_ALL_SESSION_LEVEL	0xFF	--
Description:	Session type definition		

8.1.4 Dcm_ProtocolType

Name:	Dcm_ProtocolType		
Type:	uint8		
Range:	DCM_OBD_ON_CAN	0x00	OBD on CAN (ISO15765-4; ISO15031-5)
	DCM_OBD_ON_FLEXRAY	0x01	(OBD on Flexray (Manufacturer specific; ISO15031-5))
	DCM_OBD_ON_IP	0x02	(OBD on Internet Protocol (Manufacturer specific; ISO15031-5))
	DCM_UDS_ON_CAN	0x03	UDS on CAN (ISO15765-3; ISO14229-1)

	DCM_UDS_ON_FLEXRAY	0x04	UDS on FlexRay (Manufacturer specific; ISO14229-1)
	DCM_UDS_ON_IP	0x05	(UDS on Internet Protocol (Manufacturer specific; ISO14229-1))
	DCM_ROE_ON_CAN	0x06	Response On Event on CAN
	DCM_ROE_ON_FLEXRAY	0x07	Response On Event on FlexRay
	Reserved for further AUTOSAR implementation	0x07..0xEF	--
	DCM_ROE_ON_IP	0x08	(Response on Event on Internet Protocol)
	DCM_PERIODICTRANS_ON_CAN	0x09	Periodic Transmission on CAN
	DCM_PERIODICTRANS_ON_FLEXRAY	0x0A	Periodic Transmission on FlexRay
	DCM_PERIODICTRANS_ON_IP	0x0B	(Periodic Transmission on Internet Protocol)
	DCM_SUPPLIER_1	0xF0	Reserved for SW supplier specific.
	DCM_SUPPLIER_2	0xF1	Reserved for SW supplier specific.
	DCM_SUPPLIER_3	0xF2	Reserved for SW supplier specific.
	DCM_SUPPLIER_4	0xF3	Reserved for SW supplier specific.
	DCM_SUPPLIER_5	0xF4	Reserved for SW supplier specific.
	DCM_SUPPLIER_6	0xF5	Reserved for SW supplier specific.
	DCM_SUPPLIER_7	0xF6	Reserved for SW supplier specific.
	DCM_SUPPLIER_8	0xF7	Reserved for SW supplier specific.
	DCM_SUPPLIER_9	0xF8	Reserved for SW supplier specific.
	DCM_SUPPLIER_10	0xF9	Reserved for SW supplier specific.
	DCM_SUPPLIER_11	0xFA	Reserved for SW supplier specific.
	DCM_SUPPLIER_12	0xFB	Reserved for SW supplier specific.
	DCM_SUPPLIER_13	0xFC	Reserved for SW supplier specific.
	DCM_SUPPLIER_14	0xFD	Reserved for SW supplier specific.
	DCM_SUPPLIER_15	0xFE	Reserved for SW supplier specific.
Description:	Protocol type definition		

Note : This type is defined in Rte_Dcm_Type.h header file, which is generated by the RTE generator.

8.1.5 Dcm_NegativeResponseCodeType

Name:	Dcm_NegativeResponseCodeType		
Type:	uint8		
Range:	DCM_E_POSITIVERESPONSE	0x00	PR
	range of values 0x01..0x0F reserved by ISO 14229	0x01..0x0F	ISOSAERESRVD
	DCM_E_GENERALREJECT	0x10	GR
	DCM_E_SERVICENOTSUPPORTED	0x11	SNS
	DCM_E_SUBFUNCTIONNOTSUPPORTED	0x12	SFNS
	DCM_E_INCORRECTMESSAGELENGTHORINVALIDFORMAT	0x13	IMLOIF
	DCM_E_RESPONSETOOLONG	0x14	RTL
	range of values 0x15..0x20 reserved by ISO 14229	0x15..0x20	ISOSAERESRVD
	DCM_E_BUSYREPEATREQUEST	0x21	BRR
	DCM_E_CONDITIONSNOTCORRECT	0x22	CNC
	value 0x23 reserved by ISO 14229	0x23	ISOSAERESRVD
	DCM_E_REQUESTSEQUENCEERROR	0x24	RSE
	DCM_E_NORESPONSEFROMSUBNETCOMPONENT	0x25	NRFSC
	DCM_E_FAILUREPREVENTSEXECUTIONOFREQUESTEDACTION	0x26	FPEORA
	range of values 0x27..0x30 reserved by ISO 14229	0x27..0x30	ISOSAERESRVD
	DCM_E_REQUESTOUTOFRANGE	0x31	ROOR
	value 0x32 reserved by ISO 14229	0x32	ISOSAERESRVD
	DCM_E_SECURITYACCESSDENIED	0x33	SAD
	value 0x34 reserved by ISO 14229	0x34	ISOSAERESRVD
	DCM_E_INVALIDKEY	0x35	IK
	DCM_E_EXCEEDNUMBEROFATTEMPTS	0x36	ENOA
	DCM_E_REQUIREDTIMEDELAYNOTEXPIRED	0x37	RTDNE
	range of values 0x38..0x4F reserved by ISO 15764	0x38..0x4F	RBEDLSD
	range of values 0x50..0x6F reserved by ISO 14229	0x50..0x6F	ISOSAERESRVD
	DCM_E_UPLOADDOWNLOADNOTACCEPTED	0x70	UDNA
	DCM_E_TRANSFERDATASUSPENDED	0x71	TDS

	DCM_E_GENERALPROGRAMMINGFAILURE	0x72	GPF
	DCM_E_WRONGBLOCKSEQUENCECOUNTER	0x73	WBSC
	range of values 0x74..0x77 reserved by ISO 14229	0x74..0x77	ISOSAERESRVD
	DCM_E_REQUESTCORRECTLYRECEIVEDRESPONSEPENDING	0x78	RCRRP
	range of values 0x79..0x7D reserved by ISO 14229	0x79..0x7D	ISOSAERESRVD
	DCM_E_SUBFUNCTIONNOTSUPPORTEDINACTIVESESSION	0x7E	SFNSIAS
	DCM_E_SERVICENOTSUPPORTEDINACTIVESESSION	0x7F	SNSIAS
	value 0x80 reserved by ISO 14229	0x80	ISOSAERESRVD
	DCM_E_RPMTOOHIGH	0x81	RPMTH
	DCM_E_RPMTOOLOW	0x82	RPMTL
	DCM_E_ENGINEISRUNNING	0x83	EIR
	DCM_E_ENGINEISNOTRUNNING	0x84	EINR
	DCM_E_ENGINERUNTIMETOOLOW	0x85	ERTTL
	DCM_E_TEMPERATURETOOHIGH	0x86	TEMPTH
	DCM_E_TEMPERATURETOOLOW	0x87	TEMPTL
	DCM_E_VEHICLESPEEDTOOHIGH	0x88	VSTH
	DCM_E_VEHICLESPEEDTOOLOW	0x89	VSTL
	DCM_E_THROTTLE_PEDALTOOHIGH	0x8A	TPTH
	DCM_E_THROTTLE_PEDALTOOLOW	0x8B	TPTL
	DCM_E_TRANSMISSIONRANGENOTINNEUTRAL	0x8C	TRNIN
	DCM_E_TRANSMISSIONRANGENOTINGEAR	0x8D	TRNIG
	value 0x8E reserved by ISO 14229	0x8E	ISOSAERESRVD
	DCM_E_BRAKESWITCH_NOTCLOSED	0x8F	BSNC
	DCM_E_SHIFTERLEVERNOTINPARK	0x90	SLNIP
	DCM_E_TORQUECONVERTERCLUTCHLOCKED	0x91	TCCL
	DCM_E_VOLTAGETOOHIGH	0x92	VTH
	DCM_E_VOLTAGETOOLOW	0x93	VTL
	range of values 0x94..0xEF reserved by ISO 14229	0x94..0xEF	RFSCNC
	DCM_E_CRLINTEGRITYCHECKFAILED	0xF0	CICF
	DCM_E_CRLEXPIRED	0xF1	CE
	DCM_E_CERTVERIFICATIONFAILED	0xF2	CVF

	range of values 0xF3..0xFE reserved by ISO 14229	0xF3...0xFE	RFSCNC
	DCM_E_AUTHENTICATIONREQUIRED	0x34	AR
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDTIMEPERIOD	0x50	CVFITP
	DCM_E_DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDSIGNATURE	0x51	CVFIS
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDCHAINOFTRUST	0x52	CVFICOT
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDTYPE	0x53	CVFIT
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDFORMAT	0x54	CVFIF
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDCONTENT	0x55	CVFIC
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDSCOPE	0x56	CVFIS
	DCM_E_CERTIFICATEVERIFICATIONFAILEDINVALIDCERTIFICATE	0x57	CVFIC
	DCM_E_OWNERSHIPVERIFICATIONFAILED	0x58	OVF
	DCM_E_CHALLENGECALCULATIONFAILED	0x59	CCF
	DCM_E_SETTINGACCESSRIGHTSFAILED	0x5A	SARF
	DCM_E_SESSIONKEYCREATIONDERIVATIONFAILED	0x5B	SKCDF
	DCM_E_CONFIGURATIONDATAUSAGEFAILED	0x5C	CDUF
	DCM_E_DEAUTHENTICATIONFAILED	0x5D	DAF
	value 0xFF reserved by ISO 14229	0xFF	ISOSAERESRVD
Description:	This Table of available Negative Response Codes represents the allowed Response Codes an AUTOSAR SW Component shall return after a function call. For the allowed NRC of the executed Service ID please refer to the specification of the service in ISO14229-1 (UDS) and ISO15031-5 (OBD/CARB) (see chapter 4.2.4 Response code parameter definition Table 12).		

Note : This type is defined in Rte_Dcm_Type.h header file, which is generated by the RTE generator.

8.1.6 Dcm_CommunicationModeType

Name:	Dcm_CommunicationModeType		
Type:	uint8		
Range:	DCM_ENABLE_RX_TX_NORM	0x00	Enable the Rx and Tx for normal communication
	DCM_ENABLE_RX_DISABLE_TX_NORM	0x01	Enable the Rx and disable the

			Tx for normal communication
	DCM_DISABLE_RX_ENABLE_TX_NORM	0x02	Disable the Rx and enable the Tx for normal communication
	DCM_DISABLE_RX_TX_NORMAL	0x03	Disable Rx and Tx for normal communication
	DCM_ENABLE_RX_TX_NM	0x04	Enable the Rx and Tx for network management communication
	DCM_ENABLE_RX_DISABLE_TX_NM	0x05	Enable Rx and disable the Tx for network management communication
	DCM_DISABLE_RX_ENABLE_TX_NM	0x06	Disable the Rx and enable the Tx for network management communication
	DCM_DISABLE_RX_TX_NM	0x07	Diable Rx and Tx for network management communication
	DCM_ENABLE_RX_TX_NORM_NM	0x08	Enable Rx and Tx for normal and network management communication
	DCM_ENABLE_RX_DISABLE_TX_NORM_NM	0x09	Enable the Rx and disable the Tx for normal and network management communication
	DCM_DISABLE_RX_ENABLE_TX_NORM_NM	0x0A	Disable the Rx and enable the Tx for normal and network management communication
	DCM_DISABLE_RX_TX_NORM_NM	0x0B	Disable Rx and Tx for normal and network management communication
Description:	--		

8.1.7 Dcm_ConfigType

Name:	Dcm_ConfigType
Type:	Structure
Range:	Implementation specific
Description:	This type defines a data structure for the post build parameters of the DCM . At initialization the DCM gets a pointer to a structure of this type to get access to its configuration data, which is necessary for initialization.

8.1.8 Dcm_ConfirmationStatusType

Name:	Dcm_ConfirmationStatusType		
Type:	uint8		
Range:	DCM_RES_POS_OK	0x00	Indicates the type of the positive response when E_OK is returned.
	DCM_RES_POS_NOT_OK	0x01	Indicates the type of the positive response when E_NOT_OK is returned.
	DCM_RES_NEG_OK	0x02	Indicates the type of the Negative response when E_NOT_OK is returned.
	DCM_RES_NEG_NOT_OK	0x03	Indicates the type of the Negative response when E_PENDING is returned.
Description:	--		

8.1.9 Dcm_OpStatusType

Name:	Dcm_OpStatusType		
Type:	uint8		
Range:	DCM_INITIAL	0x00	Indicates the initial call to the operation
	DCM_PENDING	0x01	Indicates that a pending return has been done on the previous call of the operation
	DCM_CANCEL	0x02	Indicates that the DCM requests to cancel the pending operation
	DCM_FORCE_RCRRP_OK	0x03	Confirm a response pending transmission

Description:	--

8.1.10 Dcm_ReturnReadMemoryType

Name:	Dcm_ReturnReadMemoryType		
Type:	uint8		
Range:	DCM_READ_OK	0x00	Reading has been done
	DCM_READ_PENDING	0x01	Reading is pending, another call is request to finalize the reading
	DCM_READ_FAILED	0x02	Reading has failed
	DCM_READ_FORCE_RCRRP	0x03	Reading is pending, the Response pending transmission starts immediately
Description:	Return values of Callout Dcm_ReadMemory		

8.1.11 Dcm_ReturnWriteMemoryType

Name:	Dcm_ReturnWriteMemoryType		
Type:	uint8		
Range:	DCM_WRITE_OK	0x00	Writing has been done
	DCM_WRITE_PENDING	0x01	Writing is pending, another called is requested
	DCM_WRITE_FAILED	0x02	The writing has failed
	DCM_WRITE_FORCE_RCRRP	0x03	Writing is pending, the Response pending transmission starts immediately
Description:	Return type of callout Dcm_WriteMemory		

8.1.12 Dcm_RoeStateType

Name:	Dcm_RoeStateType
Type:	uint8

Range:	DCM_ROE_ACTIVE	0x00	--
	DCM_ROE_UNACTIVE	0x01	--
Description:	--		

8.1.13 Dcm_EcuStartModeType

Name:	Dcm_EcuStartModeType		
Type:	uint8		
Range:	DCM_COLD_START	0x00	The ECU starts normally
	DCM_WARM_START	0x01	The ECU starts from a bootloader jump
Description:	Allows the DCM to know if a diagnostic response shall be sent in the case of a jump from bootloader		

8.1.14 Dcm_ProgConditionsType

Name:	Dcm_ProgConditionsType		
Type:	Structure		
Element:	uint8	ProtocolId	Id of the protocol on wich the request has been received
	uint8	TesterSourceAddr	Tester source address configured per protocol
	uint8	Sid	Service identifier of the received request
	uint8	SubFncId	Identifier of the received subfonction
	boolean	ReprogramingRequest	Set to true in order to request reprogramming of the ECU. HIS representation of FL_ExtProgRequestType.
	boolean	ApplUpdated	Indicate whether the application has been updated or not. HIS representation of

			FL_ApplicationUpdateType.
	boolean	ResponseRequired	Set to true in case the flashloader or application shall send a response. HIS representation of FL_ResponseRequiredType.
Description:	Used in Dcm_SetProgConditions() to allow the integrator to store relevant information prior to jumping to bootloader.		

8.1.15 Dcm_MsgItemType

Name:	Dcm_MsgItemType
Type:	uint8
Description:	Base type for diagnostic message item

8.1.16 Dcm_MsgType

Name:	Dcm_MsgType
Type:	Dcm_MsgItemType*
Description:	Base type for diagnostic message (request, positive or negative response)

8.1.17 Dcm_MsgLenType

Name:	Dcm_MsgLenType
Type:	uint32
Description:	Length of diagnostic message (request, positive or negative response). The maximum length is dependent of the underlying transport protocol/media. E. g. the maximum message length for CAN Transport Layer is 4095bytes.

8.1.18 Dcm_MsgAddInfoType

Name:	Dcm_MsgAddInfoType		
Type:	Structure		
Element:	Bit0	reqType	0 = physical request 1 = functional request
	Bit1	suppressPosResponse	0 = no (do not suppress) 1 = yes (no positive response will be sent)
Description:	Additional information on message request. Datastructure: Bitfield		

8.1.19 Dcm_IdContextType

Name:	Dcm_IdContextType
Type:	uint8
Description:	This message context identifier can be used to determine the relation between request and response confirmation.

8.1.20 Dcm_MsgContextType

Name:	Dcm_MsgContextType		
Type:	Structure		
Element:	Dcm_MsgType	reqData	Request data, starting directly after service identifier (which is not part of this data)
	Dcm_MsgLenType	reqDataLen	Request data length (excluding service identifier)
	Dcm_MsgType	resData	Positive response data, starting directly after service identifier (which is not part of this data).
	Dcm_MsgLenType	resDataLen	Positive response data length (excluding service identifier)

	Dcm_MsgAddInfoType	msgAddInfo	Additional information about service request and response (see: Dcm_MsgAddInfo)
	Dcm_MsgLenType	resMaxDataLen	The maximal length of a response is restricted by the size of the buffer. The buffer size can depend on the diagnostic protocol identifier which is assigned to this message, e. g. an OBD protocol id can obtain other properties than the enhanced diagnostic protocol id. The resMaxDataLen is a property of the diagnostic protocol assigned by the DSL. The value does not change during communication. It cannot be implemented as a constant, because it can differ between different diagnostic protocols.
	Dcm_IdContextType	idContext	This message context identifier can be used to determine the relation between request and response confirmation. This identifier can be stored within the application at request time, so that the response can be assigned to the original request. Background: Within the confirmation, the message context is no more valid, all message data is lost. You need an additional information to determine the request to which this confirmation belongs.
	PduIdType	dcmRxPduId:	Pdu identifier on which the request

			was received. The PduId of the request can have consequences for message processing. E. g. an OBD request will be received on the OBD PduId and will be processed slightly different than an enhanced diagnostic request received on the physical
Description:	This data structure contains all information which is necessary to process a diagnostic message from request to response and response confirmation.		

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8.1.21 Dcm_AuthenticationRoleType

Name:	Dcm_AuthenticationRoleType
Type:	Array
Description:	This array type of a Role for Authentication Service.

8.2 Macro Constants

None

8.3 Interfaces

8.3.1 DCMServices

8.3.1.1 GetSecurityLevel

Function Name	Xxx_GetSecurityLevel	
Syntax:	FUNC(Std_ReturnType, DCM_CODE) Xxx_GetSecurityLevel (P2VAR(Dcm_SecLevelType, AUTOMATIC, DCM_APPL_DATA) SecLevel)	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	SecLevel	Active Security Level value Conversion formula to

		calculate SecurityLevel out of tester requested SecurityAccessType parameter: SecurityLevel = (SecurityAccessType + 1) / 2 Content of SecurityAccessType is according to "securityAccessType" parameter of SecurityAccess request (see [11])
Return Value	Std_ReturnType	E_OK: This Value is always returned.
Description	This function provides the active security level value.	
Preconditions	The Dcm module must be initialized	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityLevel in the container DcmDspSecurityRow is configured.	

8.3.1.2 GetSesCtrlType

Function Name	Xxx_GetSesCtrlType	
Syntax:	FUNC(Std_ReturnType, DCM_CODE) Xxx_GetSesCtrlType (P2VAR(Dcm_SesCtrlType, AUTOMATIC, DCM_APPL_DATA) SesCtrlType)	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	SesCtrlType	Active Session Control Type value Content is according to “Diagnostic Session Type” of Diagnostic Session Control Request
Return Value	Std_ReturnType	E_OK: This Value is always returned.
Description	This function provides the active session control type value.	

Preconditions	The Dcm module must be initialized
Configuration Dependency	This API is available only if configuration parameter DcmDspSessionLevel in the container DcmDspSessionRow is configured.

8.3.1.3 GetActiveProtocol

Function Name	Xxx_GetActiveProtocol	
Syntax:	FUNC(Std_ReturnType, DCM_CODE Xxx_GetActiveProtocol (P2VAR(Dcm_ProtocolType, AUTOMATIC, DCM_APPL_DATA)ActiveProtocol))	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	ActiveProtocol	ActiveProtocol Type value
Return Value	Std_ReturnType	E_OK: This Value is always returned.
Description	This service reads and returns the value of current active protocol	
Preconditions	The Dcm module must be initialized	
Configuration Dependency	None	

8.3.1.4 ResetToDefaultSession

Function Name	Xxx_ResetToDefaultSession	
Syntax:	FUNC(void, DCM_CODE) Xxx_ResetToDefaultSession(void)	
Service ID	0x2a	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	E_OK: this value is always returned.

Description	The call to this function allows the application to reset the current session to Defaultsession. Example: Automatic termination of an extended diagnostic session upon exceeding of a speed limit.
Preconditions	None.
Configuration Dependency	None

8.3.1.5 Dcm_SetDeauthenticatedRole

Function Name	Dcm_SetDeauthenticatedRole	
Syntax:	FUNC(void, DCM_CODE) Dcm_SetDeauthenticatedRole (uint16 connectionId, Dcm_AuthenticationRoleType deauthenticatedRole)	
Service ID	0x79	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	connectionId deauthenticatedRole	
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	E_OK: this value is always returned.
Description	Sets a new role used in deauthenticated state for that connection. The set role is valid until the connection switches into authenticated state or the ECU is reset	
Preconditions	None.	
Configuration Dependency	None	

8.3.2 Memory Callout

Note Refer to Dcm_Callouts.c

8.3.2.1 Dcm_ReadMemory

Function Name	Dcm_ReadMemory	
Syntax:	FUNC(Dcm_ReturnReadMemoryType, DCM_CODE) Dcm_ReadMemory(Dcm_OpStatusType OpStatus, uint8 MemoryIdentifier, uint32 MemoryAddress,uint32 MemorySize, P2VAR(uint8, AUTOMATIC,DCM_APPL_DATA) MemoryData)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid DCM_PENDING: All In-parameters are set to 0x0 DCM_CANCEL: All In-parameters are set to 0x0 DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x0
	MemoryIdentifier	Identifier of the Memory Block Note: If it's not used this parameter shall be set to 0.
	MemoryAddress	Starting address of server memory from which data is to be retrieved.
	MemorySize	Number of bytes in the MemoryData
Parameters (Inout)	None	
Parameters (Out)	MemoryData	Data read (Points to the diagnostic buffer in DCM)
Return Value	Dcm_ReturnReadMemoryType	DCM_READ_OK: read was successful DCM_READ_FAILED: read was not successful

		DCM_READ_PENDING: read is not yet finished DCM_READ_FORCE_RCRRP: reading is pending, the Response pending transmission starts immediately
Description	The Dcm_ReadMemory callout is used to request memory data identified by the parameter memoryAddress and memorySize from the UDS request message. This service is needed for the implementation of UDS services: - ReadMemoryByAdress - RequestUpload - ReadDataByIdentifier (in case of Dynamical DID defined by memory address)	
Preconditions	DCM module must be initialised	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 35 and 53 and the macro(s)DCM_READ_MEMORY_BY_ADDRESS and DCM_REQUEST_UPLOAD_SERVICE are STD_ON.	

8.3.2.2 Dcm_WriteMemory

Function Name	Dcm_WriteMemory
Syntax:	FUNC(Dcm_ReturnReadMemoryType, DCM_CODE) Dcm_ReadMemory(Dcm_OpStatusType LddOpStatus, uint8 LucMemoryIdentifier, uint32 LulMemoryAddress, uint32 LulMemorySize, P2VAR(uint8, AUTOMATIC, DCM_APPL_DATA) LpMemoryData)
Sync/Async	Asynchronous
Reentrancy	Non Reentrant

Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid DCM_PENDING: All In-parameters are set to 0x0 DCM_CANCEL: All In-parameters are set to 0x0 DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x0
	MemoryIdentifier	Identifier of the Memory Block Note: If it's not used this parameter shall be set to 0.
	MemoryAddress	Starting address of server memory in which data is to be copied.
	MemorySize	Number of bytes in the MemoryData
	MemoryData	Data to write (Points to the diagnostic buffer in DCM)
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Dcm_ReturnWriteMemoryType	DCM_WRITE_OK: write was successful DCM_WRITE_FAILED: write was not successful DCM_WRITE_PENDING: write is not yet finished DCM_WRITE_FORCE_RCRRP: writing is pending, the Response pending transmission starts immediately
Description	The Dcm_WriteMemory callout is used to write memory data identified by the parameter memoryAddress and memorySize. This service is needed for the implementation of UDS services : -WriteMemoryByAdress	

	- RequestDownload
Preconditions	DCM module must be initialised
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 61 and 52 and the macro(s)DCM_WRITE_MEMORY_BY_ADDRESS and DCM_REQUEST_DOWNLOAD_SERVICE are STD_ON.

8.3.3 ProgConditions Callout

Note Refer to Dcm_Callouts.c. If you use the Autron Fbl, don't modify callout code provided.

8.3.3.1 Dcm_SetProgConditions

Function Name	Dcm_SetProgConditions	
Syntax:	Std_ReturnType Dcm_SetProgConditions(Dcm_OpStatusType OpStatus, Dcm_ProgConditionsType * ProgConditions)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid DCM_PENDING: All In-parameters are set to 0x0 DCM_CANCEL: All In-parameters are set to 0x0 DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x0
	ProgConditions	Conditions on which the jump to bootloader has been requested
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	E_OK: Transfer was successful E_NOT_OK: Transfer was not successful DCM_E_PENDING: Transfer is not yet finished

Description	The Dcm_SetProgConditions callout allows the integrator to store relevant information prior to jumping to bootloader / jump due to ECUReset request. The context parameter are defined in Dcm_ProgConditionsType.

8.3.3.2 Dcm_GetProgConditions

Function Name	Dcm_GetProgConditions	
Syntax:	Dcm_EcuStartModeType Dcm_GetProgConditions(Dcm_ProgConditionsType * ProgConditions)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	ProgConditions	Conditions on which the jump from the bootloader has been requested
Return Value	Dcm_EcuStartModeType	--
Description	The Dcm_GetProgConditions callout is called upon Dcm initialization and allows to determine if a response ($50 or $51) has to be sent. The context parameter are defined in Dcm_ProgConditionsType.	

8.3.4 RequestDownload and Transfer Callout

8.3.4.1 Dcm_ProcessRequestTransferExit

Function Name	Dcm_ProcessRequestTransferExit
Syntax:	Std_ReturnType Dcm_ProcessRequestTransferExit(Dcm_OpStatusType LucOpStatus, P2VAR(uint8, AUTOMATIC, DCM_APPL_DATA) LpMemoryData, uint32* LulParameterRecordSize, P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC,

	DCM_PRIVATE_DATA)LpNegativeErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid DCM_PENDING: All In-parameters are set to 0x0 DCM_CANCEL: All In-parameters are set to 0x0 DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x0
	ParameterRecord	(Optional) Pointer to vehicle-manufacturer-specific data
	ParameterRecordSize	(Optional) Length of ParameterRecord in bytes
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	See below
Return Value	Std_ReturnType	E_OK: Transfer was successful E_NOT_OK: Transfer was not successful DCM_E_PENDING: Transfer is not yet finished
Description	Calloutfunction. DCM shall call this callout function to terminate a download or upload process. This service is needed for the implementation of UDS service RequestTransferExit.	
Preconditions	None	
Configuration Dependency	None	

8.3.4.2 Dcm_ProcessRequestUpload

Function Name	Dcm_ProcessRequestUpload	
Syntax:	FUNC(Std_ReturnType, DCM_CODE) Dcm_ProcessRequestUpload(Dcm_OpStatusType OpStatus, uint8 DataFormatIdentifier, uint32 MemoryAddress, uint32 MemorySize, P2VAR(uint32,AUTOMATIC,DCM_PRIVATE_DATA)LpBlockLength, P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, DCM_PRIVATE_DATA)LpNegativeErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid DCM_PENDING: All In-parameters are set to 0x0 DCM_CANCEL: All In-parameters are set to 0x0 DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x0
	DataFormatIdentifier	Bit 7 - 4: Compression Method - 0x0: not compressed - 0x1..F: vehicle-manufacturer-specific Bit 3 - 0: Encrypting method - 0x0: not encrypted - 0x1..F: vehicle-manufacturer-specific
	MemoryAddress	Starting address of server memory from which data are to be copied

	MemorySize	Uncompressed memory size in bytes
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	See below
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished
Description	Callout function. DCM shall call this callout function to start an upload process. This service is needed for the implementation of UDS service RequestUpload. If you need to check the memory address range, you can implement this function.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 35 and 53 and the macro(s)DCM_READ_MEMORY_BY_ADDRESS and DCM_REQUEST_UPLOAD_SERVICE are STD_ON.	

8.3.4.3 Dcm_ProcessRequestDownload

Function Name	Dcm_ProcessRequestDownload
Syntax:	FUNC(Std_ReturnType, DCM_CODE) Dcm_ProcessRequestDownload(Dcm_OpStatusType OpStatus, uint8 DataFormatIdentifier, uint32 MemoryAddress, uint32 MemorySize, P2VAR(uint32, AUTOMATIC, CM_PRIVATE_DATA)LpBlockLength, P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC,

	DCM_PRIVATE_DATA)LpNegativeErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid DCM_PENDING: All In-parameters are set to 0x0 DCM_CANCEL: All In-parameters are set to 0x0 DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x0
	DataFormatIdentifier	Bit7-4: Compression Method -0x0:not compressed -0x1..F: vehicle-manufacturer-specific Bit3-0: Encrypting method -0x0: not encrypted -0x1..F:vehicle-manufacturer-specific
	MemoryAddress	Starting address of server memory to which data is to be written
	MemorySize	Uncompressed memory size in bytes
Parameters (Inout)	None	
Parameters (Out)	BlockLength	Max. Number of bytes for one Dcm_WriteMemory
	ErrorCode	See below
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished

Description	Callout function. DCM shall call this callout function to start a download process. This service is needed for the implementation of UDS service RequestDownload. If you need to check the memory address range, you can implement this function.
Preconditions	None
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 61 and 52 and the macro(s)DCM_WRITE_MEMORY_BY_ADDRESS and DCM_REQUEST_DOWNLOAD_SERVICE are STD_ON.

8.3.5 DataService_{Data}

8.3.5.1 Read Asynchronous

8.3.5.1.1 Xxx_ReadData

Function Name	Xxx_ReadData	
Syntax:	Std_ReturnTypeXxx_ReadData(Dcm_OpStatusType OpStatus, uint8*Data)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (Inout)	None	
Parameters (Out)	Data	Buffer where the requested data shall be copied to
Return Value	Std_ReturnType	E_OK: Request was successful.
Description	This function requests to the application a data value of a DID/PID	

	if DcmDspDataUsePort is set to USE_DATA_SYNCH_CLIENT_SERVER.
Preconditions	None
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the configuration parameter DcmDspDataUsePort is configured as either "USE_DATA_ASYNCH_CLIENT_SERVER"

8.3.5.1.2 Xxx_ConditionCheckRead

Function Name	Xxx_ConditionCheckRead	
Syntax:	Std_ReturnTypeXxx_ConditionCheckRead(Dcm_NegativeResponseCodeType *ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application if the conditions to read the Data are correct.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the configuration parameter DcmDspDataUsePort is configured as either " USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_FNC"	

8.3.5.2 Read Synchronous

8.3.5.2.1 Xxx_ReadData

Function Name	Xxx_ReadData	
Syntax:	Std_ReturnType Xxx_ReadData(uint8*Data)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	Data	Buffer where the requested data shall be copied to
Return Value	Std_ReturnType	E_OK: Request was successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application a data value of a DID/PID if DcmDspDataUsePort is set to USE_DATA_ASYNCH_CLIENT_SERVER.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the configuration parameter DcmDspDataUsePort is configured as either “USE_DATA_SYNCH_CLIENT_SERVER”	

8.3.5.2.2 Xxx_ConditionCheckRead

Function Name	Xxx_ConditionCheckRead	
Syntax:	Std_ReturnTypeXxx_ConditionCheckRead(Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure

		(E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application if the conditions to read the Data are correct.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the configuration parameter DcmDspDataUsePort is configured as either "USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC"	

8.3.5.3 Write Fixed Length

8.3.5.3.1 Xxx_WriteData

Function Name	Xxx_WriteData	
Syntax:	Std_ReturnTypeXxx_WriteData(uint8*Data, Dcm_OpStatusType OpStatus, Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Asynchronous/Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	Data	Buffer containing the data to be written
	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not

		successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests the application to write a data value of a DID.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 46, and the configuration parameter DcmDspDataUsePort is configured as either “USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/ USE_DATA_ASYNCH_FNC” and DcmDspDataFixedLength is set to TRUE.	

8.3.5.4 Write Variable Length

8.3.5.4.1 Xxx_WriteData

Function Name	Xxx_WriteData	
Syntax:	Std_ReturnTypeXxx_WriteData(uint8*Data, uint16 DataLength, Dcm_OpStatusType OpStatus, Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Asynchronous/Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	Data	Buffer containing the data to be written
	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not

		successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests the application to write a data value of a DID.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 46, and the configuration parameter DcmDspDataUsePort is configured as either “USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/ USE_DATA_ASYNCH_FNC” and DcmDspDataFixedLength is set to TRUE	

8.3.5.5 Xxx_ReadDataLength Variable Length

Function Name	Xxx_ReadDataLength	
Syntax:	Std_ReturnTypeXxx_ReadDataLength(uint16*DataLength)	
Sync/Async	Asynchronous/Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	DataLength	Length of the data to be writen/read
Return Value	Std_ReturnType	E_OK: this value is always returned.
Description	This function requests the application to return the data length of a Data.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the configuration parameter DcmDspDataUsePort is configured as either “USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/	

	USE_DATA_ASYNCH_FNC”

8.3.5.6 Xxx_GetScalingInformation

Function Name	Xxx_GetScalingInformation	
Syntax:	Std_ReturnTypeXxx_GetScalingInformation(Dcm_OpStatusType OpStatus, uint8*ScalingInfo, Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ScalingInfo	Scaling information
	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application for the scaling information of a Data.	
Preconditions	None	
Configuration Dependency	None	

8.3.5.7 Xxx_ReturnControlToECU

Function Name	Xxx_ReturnControlToECU
Syntax:	Std_ReturnTypeXxx_ReturnControlToECU(Dcm_OpStatusTypeOpStatus, Dcm_NegativeResponseCodeType*ErrorCode)

Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application to return control to ECU of an IOControl.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 47, and the configuration parameter DcmDspDataUsePort is configured as either “USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/ USE_DATA_ASYNCH_FNC”	

8.3.5.8 Xxx_ResetToDefault

Function Name	Xxx_ResetToDefault	
Syntax:	Std_ReturnTypeXxx_ResetToDefault(Dcm_OpStatusTypeOpStatus, Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)

Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application to reset an IOControl to default value.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 47, and the configuration parameter DcmDspDataUsePort is configured as either “USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/ USE_DATA_ASYNCH_FNC”	

8.3.5.9 Xxx_FreezeCurrentState

Function Name	Xxx_FreezeCurrentState	
Syntax:	Std_ReturnTypeXxx_FreezeCurrentState(Dcm_OpStatusTypeOpStatus, Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application to freeze the current state	

	of an IOControl.
Preconditions	None
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 47, and the configuration parameter DcmDspDataUsePort is configured as either "USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/ USE_DATA_ASYNCH_FNC"

8.3.5.10 Xxx_ShortTermAdjustment

Function Name	Xxx_ShortTermAdjustment	
Syntax:	Std_ReturnTypeXxx_ShortTermAdjustment(uint8*ControlOptionRecord, Dcm_OpStatusTypeOpStatus, Dcm_NegativeResponseCodeType*ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	ControlOptionRecord	Control option parameter for the adjustment request
	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application to adjust the IO signal.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 47, and the configuration parameter DcmDspDataUsePort is configured as either	

	"USE_DATA_SYNCH_CLIENT_SERVER/ USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_FNC/ USE_DATA_ASYNCH_FNC"

8.3.6 DataServices_DIDRange_{Range}

8.3.6.1 Xxx_IsDidAvailable

Function Name	Xxx_IsDidAvailable	
Syntax:	Std_ReturnTypeXxx_IsDidAvailable(uint16DID, uint8*supported)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	DID	DID value
Parameters (Inout)	None	
Parameters (Out)	supported	Indicate if the DID is available within the range or not
Return Value	Std_ReturnType	E_OK: this value is always returned.
Description	This function requests if a specific DID is available within the range or not.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the container DcmDspDidRange needs to be configured.	

8.3.6.2 Xxx_ReadDidData

Function Name	Xxx_ReadDidData
Syntax:	Std_ReturnTypeXxx_ReadDidData(uint16DID, uint8*Data,

	Dcm_OpStatusTypeOpStatus, uint16DataLength, Dcm_NegativeResponseCodeTypeErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	DID	Data ID value
	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	Data	Buffer where the requested data shall be copied to
	DataLength	Length of the data to be read
	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests to the application a data value of a DID	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 34, and the container DcmDspDidRange needs to be configured.	

8.3.6.3 Xxx_WriteDidData

Function Name	Xxx_WriteDidData
Syntax:	Std_ReturnTypeXxx_WriteDidData(uint16DID, uint8*Data, Dcm_OpStatusTypeOpStatus, uint16DataLength, Dcm_NegativeResponseCodeTypeErrorCode)

Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	DID	Data ID value
	Data	Buffer containing the data to be written
	OpStatus	Status of the current operation
	DataLength	Length of the data to be written
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure (E_NOT_OK)
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests the application to write a data value of a DID.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 47, and the container DcmDspDidRange needs to be configured.	

NOTE : when DcmDspSecurityADRSize is present following signature will be used.

8.3.7 SecurityAccess_{SecurityLevel}

8.3.7.1 Asynchronous Operations

8.3.7.1.1 Xxx_GetSeed [SecurityAccessDataRecord on]

Function Name	Xxx_ GetSeed
Syntax:	Std_ReturnType Xxx_GetSeed(uint8* SecurityAccessDataRecord, Dcm_OpStatusType OpStatus,

	uint8* Seed, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	SecurityAccessDataRecord	Contain security access data record to be written.
	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure
	Seed	Buffer where the requested seed value shall be copied to
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests the application to get seed value	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityADRSize is configured and configuration parameter DcmDspSecurityUsePort is equal to either USE_ASYNCH_CLIENT_SERVER or USE_ASYNCH_FNC	

8.3.7.1.2 Xxx_GetSeed [SecurityAccessDataRecord off]

Function Name	Xxx_ GetSeed
Syntax:	Std_ReturnType Xxx_GetSeed(Dcm_OpStatusType OpStatus, uint8* Seed, Dcm_NegativeResponseCodeType* ErrorCode)

Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
	OpStatus	Status of the current operation
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure
	Seed	Buffer where the requested seed value shall be copied to
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	This function requests the application to get seed value	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityADRSize is not configured and configuration parameter DcmDspSecurityUsePort is equal to either USE_ASYNCH_CLIENT_SERVER or USE_ASYNCH_FNC.	

8.3.7.1.3 Xxx_CompareKey

Function Name	Xxx_CompareKey	
Syntax:	Std_ReturnType Xxx_CompareKey(uint8* Key, Dcm_OpStatusType OpStatus,)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (Out)	Key	Key, which needs to be compared
	OpStatus	Status of the current operation

Parameters (Inout)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	Request to application for comparing key	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityUsePort is equal to either USE_ASYNCH_CLIENT_SERVER or USE_ASYNCH_FNC.	

8.3.7.1.4 Xxx_GetSecurityAttemptCounter

Function Name	Xxx_GetSecurityAttemptCounter	
Syntax:	Std_ReturnType Xxx_GetSecurityAttemptCounter (Dcm_OpStatusType OpStatus, uint8* AttemptCounter)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL DCM_PENDING DCM_CANCEL
Parameters (Inout)	None	
Parameters (Out)	AttemptCounter	The attempt counter for this security level
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.

Description	Read the attempt counter for a specific security level from the application.
Preconditions	None
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityAttemptCounterEnabled is equal to TRUE and DcmDspSecurityUsePort is equal to either USE_ASYNCH_CLIENT_SERVER or USE_ASYNCH_FNC.

8.3.7.1.5 Xxx_SetSecurityAttemptCounter

Function Name	Xxx_SetSecurityAttemptCounter	
Syntax:	Std_ReturnType Xxx_SetSecurityAttemptCounter (Dcm_OpStatusType OpStatus, uint8 AttemptCounter)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL DCM_PENDING DCM_CANCEL
	AttemptCounter	The attempt counter for this security level
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish.
Description	Set the attempt counter for a specific security level in the application	
Preconditions	None	

Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityAttemptCounterEnabled is equal to TRUE and DcmDspSecurityUsePort is equal to either USE_ASYNCH_CLIENT_SERVER or USE_ASYNCH_FNC.

8.3.7.2 Synchronous Operations

8.3.7.2.1 Xxx_ GetSeed [SecurityAccessDataRecord on]

Function Name	Xxx_ GetSeed	
Syntax:	Std_ReturnType Xxx_GetSeed(uint8* SecurityAccessDataRecord, uint8* Seed, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	SecurityAccessDataRecord	Contain security access data record to be written.
	OpStatus	Status of the current operation
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure
	Seed	Buffer where the requested seed value shall be copied to
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	This function requests the application to get seed value	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityADRSize is configured and configuration parameter DcmDspSecurityUsePort is equal to either	

	USE_SYNCH_CLIENT_SERVER and USE_SYNCH_FNC.

8.3.7.2.2 Xxx_ GetSeed [SecurityAccessDataRecord off]

Function Name	Xxx_ GetSeed	
Syntax:	Std_ReturnType Xxx_GetSeed(uint8* Seed, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	NRC to be sent in the negative response in case of failure
	Seed	Buffer where the requested seed value shall be copied to
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	This function requests the application to get seed value	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityADRSize is not configured and configuration parameter DcmDspSecurityUsePort is equal to either USE_SYNCH_CLIENT_SERVER and USE_SYNCH_FNC.	

8.3.7.2.3 Xxx_CompareKey

Function Name	Xxx_CompareKey	
Syntax:	Std_ReturnType Xxx_CompareKey(uint8* Key)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (Out)	Key	Key, which needs to be

		compared
Parameters (Inout)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	Request to application for comparing key	
Preconditions	None	
Configuration Dependency	This API is available only if configuration parameter DcmDspSecurityUsePort is equal to either USE_SYNCH_CLIENT_SERVER and USE_SYNCH_FNC.	

8.3.8 ServiceRequestNotification

8.3.8.1 Xxx_Indication

Function Name	Xxx_Indication	
Syntax:	Std_ReturnType Xxx_Indication (uint8 SID, uint8* RequestData, uint16 DataSize, uint8 ReqType, uint16 SourceAddress, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	SID	Value of service identifier
	RequestData	This parameter contains the complete request data (diagnostic buffer), except the service ID.
	DataSize	This parameter defines how many bytes in the RequestData parameter are valid
	ReqType	Addressing type of the request(0=physical request 1=functional request)
	SourceAddress	Dcm client description

Parameters (Out)	ErrorCode	E_REQUEST_NOT_ACCEPTED, E_NOT_OK
Parameters (Inout)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. E_REQUEST_NOT_ACCEPTED: Request not accepted
Description	Indication of the successful reception of a new request to application and it is called right before before the DSD verification (SID, security access, diagnostic session). Within this function application can examine the permission of the diagnostic service / environment (e.g. ECU state afterrun).	
Preconditions	None	
Configuration Dependency	This API is available only if configuration container DcmDslServiceRequestSupplierNotification is configured.	

8.3.8.2 Xxx_Confirmation

Function Name	Xxx_Confirmation	
Syntax:	Std_ReturnType Xxx_Confirmation (uint8 SID, uint8 ReqType, uint16 SourceAddress, Dcm_ConfirmationStatusType ConfirmationStatus)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	SID	Value of service identifier
	ConfirmationStatus	Confirmation of a successful transmission or a transmission error of a diagnostic service.
	ReqType	Addressing type of the request(0=physical request 1=functional request)
	SourceAddress	Dcm client description

Parameters (Inout)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	Confirmation of the successful reception of a new request to application.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration container DcmDslServiceRequestSupplierNotification is configured.	

8.3.9 CallbackDCMRequestServices

8.3.9.1 Xxx_StartProtocol

Function Name	Xxx_StartProtocol	
Syntax:	Std_ReturnType Xxx_StartProtocol (Dcm_ProtocolType ProtocolID)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	ProtocolID	Name of the protocol(IDs configured within DCM_PROTOCOL_ID)
Parameters (Inout)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. E_PROTOCOL_NOT_ALLOWED: conditions in application allows no further procession of protocol
Description	Indication of protocol start. Application is able to reject further processing of requested protocol due to failed conditions.	
Preconditions	None	

Configuration Dependency	This API is available only if configuration container DcmDslCallbackDCMRequestService is configured.

8.3.9.2 Xxx_StopProtocol

Function Name	Xxx_StopProtocol	
Syntax:	Std_ReturnType Xxx_StopProtocol (Dcm_ProtocolType ProtocolID)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	ProtocolID	Name of the protocol(IDs configured within DCM_PROTOCOL_ID)
Parameters (Inout)	None	
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. E_PROTOCOL_NOT_ALLOWED: conditions in application allows no further procession of protocol
Description	Indication of protocol stop. If a running diagnostic requested is preempted by a higher prior request (of another protocol, e.g. OBD), application is requested to abort further processing of running request ProtocolID: Name of the protocol(IDs configured within DCM_PROTOCOL_ID).	
Preconditions	None	
Configuration Dependency	This API is available only if configuration container DcmDslCallbackDCMRequestService is configured.	

8.3.10 InfotypeServices_{VehInfoData}

8.3.10.1 Xxx_RequestControl

This API is not supported yet

Function Name	Xxx_RequestControl	
Syntax:	Std_ReturnType Xxx_RequestControl (uint8* OutBuffer, uint8* InBuffer)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	InBuffer	Provodes input buffer
Parameters (out)	OutBuffer	Provodes output buffer
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	This interface allows the DCM to provide OBD Service $08.	
Preconditions	None	
Configuration Dependency	None	

8.3.10.2 Xxx_GetDTRValue

This API is not supported yet

Function Name	Xxx_GetDTRValue	
Syntax:	Std_ReturnType Xxx_GetDTRValue(Dcm_OpStatusType OpStatus, uint16* Testval, uint16* Minlimit, uint16* Maxlimit, uint8* Status)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (out)	Testval	Returns the test value
	Minlimit	Returns the minimum value
	Maxlimit	Returns the maximum value

	Status	Returns the status of test
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	This interface used to get DTR data from SW-C for service 6.	
Preconditions	None	
Configuration Dependency	None	

8.3.10.3 Xxx_GetInfotypeValueData

This API is not supported yet

Function Name	Xxx_GetInfotypeValueData	
Syntax:	Std_ReturnType Xxx_GetInfotypeValueData (Dcm_OpStatusType OpStatus, uint8* DataValueBuffer)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (out)	DataValueBuffer	Provides the value of requested infotype
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	This interface used to get Infotype data from SW-C.	
Preconditions	None	
Configuration Dependency	None	

8.3.11 CallbackDCMPresentDate

8.3.11.1 Xxx_GetPresentDate

Function Name	Xxx_GetPresentDate
Syntax:	Std_ReturnType Xxx_GetPresentDate (OUT P2VAR(uint8,

	AUTOMATIC, RTE_APPL_DATA) Data)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	None	
Parameters (out)	Data	Provides the value of present date.
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful.
Description	Application provides present date.	
Preconditions	None	
Configuration Dependency	This API is available only if configuration container DcmDspCallbackDCMPresentDate is configured.	

8.3.12 RoutineServices_{RoutineName}

8.3.12.1 Fixed length

8.3.12.1.1 Xxx_Start

Function Name	Xxx_Start	
Syntax:	Std_ReturnType Xxx_Start (〈datatype〉 dataIn1,…,uint8* dataInN, Dcm_OpStatusType OpStatus, 〈datatype〉 dataOut1,…,uint8* dataOutN, uint16* currentDataLength, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	〈datatype〉 dataIn1	Provides the input data of type 〈datatype〉
	uint8* dataInN	Provides the input data of type
	OpStatus	Status of the current operation

Parameters (out)	〈datatype〉 dataOut1	output data of type 〈datatype〉
	uint8* dataOutN	Provide the buffer for dataout
	ErrorCode	E_NOT_OK, DCM_E_PENDING, E_FORCE_RCRRP
Parameters (Inout)	currentDataLength	Provides current data length
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish. E_FORCE_RCRRP: application request the transmission of a response Response Pending (NRC 0x78)
Description	This interface used start the routine service.	
Preconditions	None	
Configuration Dependency	This API is available only If configuration parameter DcmDspRoutineFixedLength is set to FALSE	

8.3.12.1.2 Xxx_Stop

Function Name	Xxx_Stop	
Syntax:	Std_ReturnType Xxx_Stop (〈datatype〉 dataIn1,…,uint8* dataInN, Dcm_OpStatusType OpStatus, 〈datatype〉 dataOut1,…,uint8* dataOutN, uint16* currentDataLength, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	〈datatype〉 dataIn1	Provides the input data of type

		<datatype>
	uint8* dataInN	Provides the input data
	OpStatus	Status of the current operation
Parameters (Inout)	currentDataLength	Provides the current data length
Parameters (out)	<datatype> dataOut1	Provides the output data of type <datatype>
	uint8* dataOutN	Provides the buffer for dataout
	ErrorCode	E_NOT_OK, DCM_E_PENDING, E_FORCE_RCRRP
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish. E_FORCE_RCRRP: application request the transmission of a response Response Pending (NRC 0x78)
Description	This interface used stop the routine service.	
Preconditions	None	
Configuration Dependency	This API is available only If configuration parameter DcmDspRoutineFixedLength is set to FALSE	

8.3.12.1.3 Xxx_RequestResults

Function Name	Xxx_RequestResults
Syntax:	Std_ReturnType Xxx_RequestResults (Dcm_OpStatusType OpStatus, <datatype> dataOut1,…,uint8* dataOutN, uint16* currentDataLength,

	Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (out)	<datatype> dataOut1	Provides the output data of type <datatype>
	currentDataLength	Provides the current data length
	ErrorCode	E_NOT_OK, DCM_E_PENDING, E_FORCE_RCRRP
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish. E_FORCE_RCRRP: application request the transmission of a response Response Pending (NRC 0x78)
Description	This interface used request the result of routine service.	
Preconditions	None	
Configuration Dependency	This API is available only If configuration parameter DcmDspRoutineFixedLength is set to FALSE	

8.3.12.2 Variable lenth

8.3.12.2.1 Xxx_Start

Function Name	Xxx_Start	
Syntax:	Std_ReturnType Xxx_Start(〈datatype〉 dataIn1,…,〈datatype〉 dataInN, Dcm_OpStatusType OpStatus, 〈datatype〉* dataOut1,…, 〈datatype〉* dataOutN, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	〈datatype〉 dataIn1	Provides the input data of type 〈datatype〉
	uint8* dataInN	Provides the input data
	OpStatus	Status of the current operation
Parameters (out)	〈datatype〉 dataOut1	onput data of type 〈datatype〉
	uint8* dataOutN	Provides buffer for dataout
	ErrorCode	E_NOT_OK, DCM_E_PENDING, E_FORCE_RCRRP
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish. E_FORCE_RCRRP: application request the transmission of a response Response Pending (NRC 0x78)
Description	This interface used start the routine service.	
Preconditions	None	
Configuration Dependency	This API is available only If configuration parameter DcmDspRoutineFixedLength is set to TRUE.	

8.3.12.2.2 Xxx_Stop

Function Name	Xxx_Stop	
Syntax:	Std_ReturnType Xxx_Stop (〈datatype〉 dataIn1,…,uint8* dataInN, Dcm_OpStatusType OpStatus, 〈datatype〉 dataOut1,…,uint8* dataOutN, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	〈datatype〉 dataIn1	Provides the input data of type 〈datatype〉
	uint8* dataInN	Provides the input data
	OpStatus	Status of the current operation
Parameters (out)	〈datatype〉 dataOut1	Provides the output data of type 〈datatype〉
	uint8* dataOutN	Provides the buffer for dataout
	ErrorCode	E_NOT_OK, DCM_E_PENDING, E_FORCE_RCRRP
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish. E_FORCE_RCRRP: application request the transmission of a response Response Pending (NRC 0x78)
Description	This interface used stop the routine service.	
Preconditions	None	
Configuration Dependency	This API is available only If configuration parameter DcmDspRoutineFixedLength is set to TRUE.	

8.3.12.2.3 Xxx_RequestResults

Function Name	Xxx_RequestResults	
Syntax:	Std_ReturnType Xxx_RequestResults (Dcm_OpStatusType OpStatus, 〈datatype〉 dataOut1,…,uint8* dataOutN, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	NA	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Status of the current operation
Parameters (out)	〈datatype〉 dataOut1	Provides the input data of type 〈datatype〉
	ErrorCode	E_NOT_OK, DCM_E_PENDING, E_FORCE_RCRRP
Return Value	Std_ReturnType	E_OK: Request was successful. E_NOT_OK: Request was not successful. DCM_E_PENDING: Request is not yet finished. Further call(s) required to finish. E_FORCE_RCRRP: application request the transmission of a response Response Pending (NRC 0x78)
Description	This interface used request the result of routine service.	
Preconditions	None	
Configuration Dependency	This API is available only If configuration parameter DcmDspRoutineFixedLength is set to TRUE	

8.3.13 External Diagnostic Service Processing

8.3.13.1 Dcm_ExternalSetNegResponse

Function Name	Dcm_ExternalSetNegResponse	
Syntax:	FUNC(void, DCM_CODE) Dcm_ExternalSetNegResponse (P2VAR(Dcm_MsgContextType, AUTOMATIC, DCM_APPL_DATA) pMsgContext, Dcm_NegativeResponseCodeType ErrorCode)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	pMsgContext	Message-related information for one diagnostic protocol identifier
	ErrorCode	NRC to be sent in the negative response in case of failure.
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	None	
Description	Used by service interpreter outside of DCM to indicate that a the final response shall be a negative one. Dcm_ExternalSetNegResponse will not finalize the response processing.	
Preconditions	Dcm_Init should be called before calling this API.	
Configuration Dependency	None	

8.3.13.2 Dcm_ExternalProcessingDone

Function Name	Dcm_ExternalProcessingDone	
Syntax:	FUNC(void, DCM_CODE) Dcm_ExternalProcessingDone (P2VAR(Dcm_MsgContextType, AUTOMATIC, DCM_APPL_DATA) pMsgContext)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	pMsgContext	Message-related information

		for one diagnostic protocol identifier
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	None	
Description	Used by service interpreter outside of DCM to indicate that a final response can be sent.	
Preconditions	Dcm_Init should be called before calling this API.	
Configuration Dependency	None	

8.3.13.3 〈Module〉_〈DiagnosticService〉

Function Name	〈Module〉_〈DiagnosticService〉	
Syntax:	Std_ReturnType 〈Module〉_〈DiagnosticService〉(Dcm_OpStatusTypeOpStatus, constDcm_MsgContextType*pMsgContext)	
Sync/Async	Asynchronous	
Reentrancy	Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: Indicates the initial call to the operation DCM_PENDING : Indicates that a pending return has been done on the previous call of the operation DCM_CANCEL: Indicates that the DCM requests to cancel the pending operation
	pMsgContext	Message-related information for one diagnostic protocol identifier The pointers in pMsgContext

		shall point behind the SID
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished
Description	Callout function. DCM shall call this callout function as soon as valid message is received on relevant DcmRxPduId on SID level . The usecase of multiple diagnostic protocols will be possible by using different arguments and the function shall be programmed in a way at it is reentrant. Caller is responsible for the lifetime of the argument pMsgContext. The name of the callout is defined within parameter DcmDsdSidTabFnc	
Preconditions	None	
Configuration Dependency	None	

8.3.13.4 〈Module〉_〈DiagnosticService〉_〈SubService〉

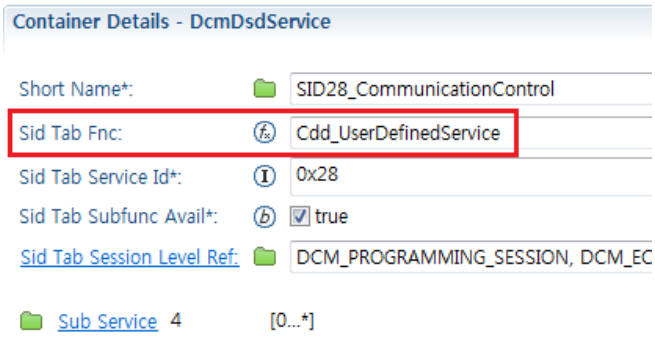
Function Name	〈Module〉_〈DiagnosticService〉_〈SubService〉	
Syntax:	Std_ReturnType〈Module〉_〈DiagnosticService〉_〈SubService〉(Dcm_OpStatusTypeOpStatus, constDcm_MsgContextType*pMsgContext)	
Sync/Async	Asynchronous	
Reentrancy	Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: Indicates the initial call to the operation DCM_PENDING : Indicates that a pending return has been done

		on the previous call of the operation DCM_CANCEL: Indicates that the DCM requests to cancel the pending operation
	pMsgContext	Message-related information for one diagnostic protocol identifier The pointer in pMsgContext shall point behind the SubFunction
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished
Description	Callout function. If a DcmDsdSubServiceFnc is configured for the received subservice, the DCM shall call this callout function as soon as this subservice is requested. The usecase of multiple diagnostic protocols will be possible by using different arguments and the function shall be programmed in a way that it is reentrant. Caller is responsible for the lifetime of the argument pMsgContext. The name of the callout is defined within parameter DcmDsdSubServiceFnc.	
Preconditions	None	
Configuration Dependency	None	

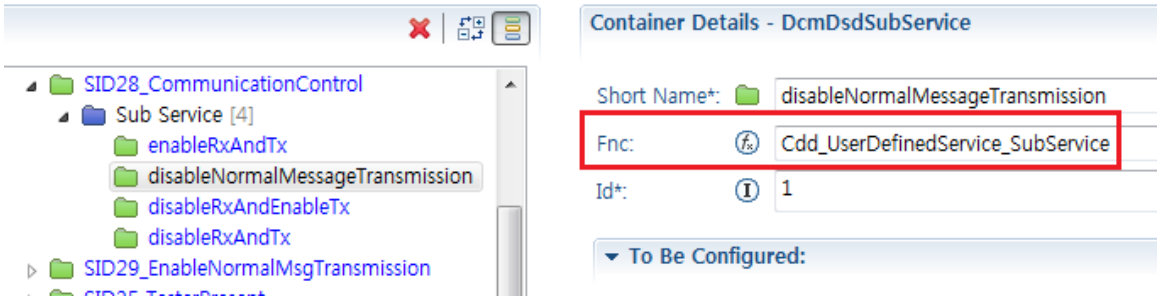
8.3.14 User defined Service Functions

플랫폼 제공 서비스대신 사용자가 직접 정의한 Service 및 Subservice 를 사용 할 수 있다. User Defined Service Function 을 사용하기 위해 아래와 같이 설정한다.

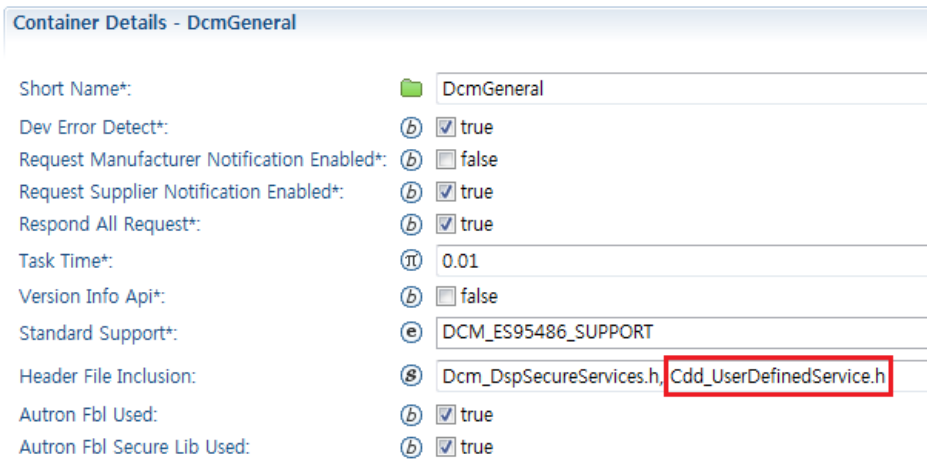
1-1. User Defined Service Function 사용하는 경우 : DcmDsdService/DcmDsdSidTabFnc 에 Symbol 등록



1-2. User Defined Subservice Function 사용하는 경우 : DcmDsdSubService/DcmDsdSubServiceFnc 에 Symbol 등록



2. DcmGeneral/Header File Inclusion 에 User Defined Function 이 선언된 헤더파일 추가



다음은 User Defined Service Function 의 Use case 별 사용 예제이다.

Note: 아래 Sample Code 는 단순참조용이므로 프로젝트에 단순 적용해서는 안 된다. 진단 사양을 위배하지 않는 선에서 로직을 구성해야한다.

Note: User Defined Function 에서 오토에버 내부함수를 Call 하는 것은 사양 위반이다. 이러한 방식으로 코드 구현을 하여 발생하는 문제에 대해서는 책임지지 않는다.

Note: User Defined Subservice Function 을 구현할 때에는 호출 시점 (오토에버 내부함수에서 User Defined Subservice Function 을 호출)에 유의하며, 그외 구현 방법은 User Defined Service Function 과 동일하다.

```
FUNC(Std_ReturnType, DCM_CODE) Cdd_UserDefinedService (
  Dcm_OpStatusType OpStatus,
  P2VAR(Dcm_MsgContextType, AUTOMATIC, DCM_APPL_DATA) pMsgContext)
{
  /* return value 는 E_NOT_OK 로 초기화 한 후 사용한다. */
  Std_ReturnType retVal = E_NOT_OK;
  Dcm_NegativeResponseCodeType ErrorCode = DCM_E_POSITIVERESPONSE;

  /* Input Parameter OpStatus 에 따라 분기 처리한다.
  OpStatus == DCM_INITIAL : 함수 최초 진입 상태
  OpStatus == DCM_PENDING : PENDING 처리 이후 재진입 상태
  OpStatus == DCM_CANCEL : 서비스 종료 상태 */
  switch(OpStatus)
  {
  case DCM_INITIAL:
    /* Do something */

    /* pMsgContext 활용 :
    pMsgContext 구조체를 활용하여 Request Message 를 파악하고, Response Message 포멧을 구현할 수 있다.
    자세한 사항은 Type Definitions chapter 의 Dcm_MsgContextType 참고한다.
    아래는 사용 예이다. */
```

```
/* Request Length Check */
if(pMsgContext->reqDataLen != 0x01)
{
  /* Check Subfunction */
  if(pMsgContext->reqData[0] == 0x01)
  {
    if(Not Ready)
    {
      /* Pending 처리의 경우 : OpStatus == DCM_PENDING 조건 내에 서비스 완료 로직 필요 */
      retVal = DCM_E_PENDING;
    }
    else
    {
      /* Subfunction 0x01 의 경우 */
      pMsgContext->resDataLen = 2U;
      pMsgContext->resData[0] = 0x01; /* Subfunction Id */
      pMsgContext->resData[1] = 0x11; /* User Response Data */
      retVal = E_OK;
    }
  }
  else if(pMsgContext->reqData[0] == 0x02)
  {
    if(Not Ready)
    {
      /* Pending 처리 */
      retVal = DCM_E_PENDING;
    }
    else
    {
      /* Subfunction 0x02 의 경우 */
      pMsgContext->resDataLen = 2U;
      pMsgContext->resData[0] = 0x02; /* Subfunction Id */
```

```
            pMsgContext->resData[1] = 0x22; /* User Response Data */
            retVal = E_OK;
          }
        }
        else
        {
          /* Not Supported Subfunction Error : DCM_E_SUBFUNCTIONNOTSUPPORTED (NRC12) */
          ErrorCode = DCM_E_SUBFUNCTIONNOTSUPPORTED;
          retVal = E_NOT_OK;
        }
      }
      else
      {
        /* Request Length Error : DCM_E_INCORRECTMESSAGELENGTHORINVALIDFORMAT (NRC13) */
        ErrorCode = DCM_E_INCORRECTMESSAGELENGTHORINVALIDFORMAT;
        retVal = E_NOT_OK;
      }

      break;

    case DCM_PENDING:
      /* Do something */

      /* Check Subfunction */
      if(pMsgContext->reqData[0] == 0x01)
      {
        if(Not Ready)
        {
          /* Pending 처리의 경우 : OpStatus == DCM_PENDING 조건 내에 서비스 완료 로직 필요 */
          retVal = DCM_E_PENDING;
        }
        else
        {
```

```
        /* Subfunction 0x01 의 경우 */
        pMsgContext->resDataLen = 2U;
        pMsgContext->resData[0] = 0x01; /* Subfunction Id */
        pMsgContext->resData[1] = 0x11; /* User Response Data */
        retVal = E_OK;
      }
    }
    else if(pMsgContext->reqData[0] == 0x02)
    {
      if(Not Ready)
      {
        /* Pending 처리 */
        retVal = DCM_E_PENDING;
      }
      else
      {
        /* Subfunction 0x02 의 경우 */
        pMsgContext->resDataLen = 2U;
        pMsgContext->resData[0] = 0x02; /* Subfunction Id */
        pMsgContext->resData[1] = 0x22; /* User Response Data */
        retVal = E_OK;
      }
    }
    else
    {
      /* Not Supported Subfunction Error : DCM_E_SUBFUNCTIONNOTSUPPORTED (NRC12) */
      ErrorCode = DCM_E_SUBFUNCTIONNOTSUPPORTED;
      retVal = E_NOT_OK;
    }

    break;
  case DCM_CANCEL:
    /* Do something */
```

```
    break;

  default:

    break;
  }

  /* ReturnValue 및 Response 처리 */
  if(retVal == E_NOT_OK)
  {
    /* Negative Response */
    Dcm_ExternalSetNegResponse(pMsgContext, ErrorCode);
    Dcm_ExternalProcessingDone(pMsgContext);
  }
  else if(retVal == E_OK)
  {
    /* Positive Response */
    Dcm_ExternalProcessingDone(pMsgContext);
  }
  else
  {
    /* Pending Response */
  }

  return retVal;
}
```

Dcm_Authentication_User_CallOut

Function Name	Dcm_Authentication_User_CallOut	
Syntax:	FUNC(void, DCM_CALL_OUT_CODE) Dcm_Authentication_User_CallOut (Dcm_OpStatusType OpStatus, P2VAR(Dcm_MsgContextType, AUTOMATIC, DCM_APPL_DATA) pMsgContext), P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, DCM_APPL_DATA) pErrorCode))	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Operation status
Parameters (Inout)	pMsgContext	Message-related information for one diagnostic protocol identifier
	pErrorCode	Negative Error code
Parameters (Out)	None	
Return Value	None	
Description	Used user for update other value for NRC or AuthenticationReturnParameter.	
Preconditions	Dcm_Init should be called before calling this API. Authentication service used.	
Configuration Dependency	None	

Dcm_Authentication_User_CallOut

Function Name	Dcm_Authentication_User_CallOut
Syntax:	FUNC(void, DCM_CALL_OUT_CODE) Dcm_Authentication_User_CallOut (Dcm_OpStatusType OpStatus, P2VAR(Dcm_MsgContextType, AUTOMATIC, DCM_APPL_DATA) pMsgContext), P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, DCM_APPL_DATA) pErrorCode))

Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	Operation status
Parameters (Inout)	pMsgContext	Message-related information for one diagnostic protocol identifier
	pErrorCode	Negative Error code
Parameters (Out)	None	
Return Value	None	
Description	Used user for update other value for NRC or AuthenticationReturnParameter.	
Preconditions	Dcm_Init should be called before calling this API. Authentication service used.	
Configuration Dependency	None	

8.3.15 RequestFileTransfer Callout

Note Refer to Dcm_Callouts.c

8.3.15.1 Dcm_ProcessRequestAddFile

Function Name	Dcm_ProcessRequestAddFile	
Syntax:	Std_ReturnType Dcm_ProcessRequestAddFile(Dcm_OpStatusType OpStatus, uint16 filePathAndNameLength, const uint8* filePathAndName, uint8 dataFormatIdentifier, uint64 fileSizeUncompressed, uint64 fileSizeCompressed, uint64* maxNumberOfBlockLength, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are

		set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	filePathAndName Length	Defines the length in bytes for the parameter filePathAndName.
	filePathAndName	Defines the file system location of the server where the file which shall be added, deleted, replaced or read from depending on the parameter modeOfOperation parameter. In addition this parameter includes the file name of the file which shall be added, deleted, replaced or read as part of the file path.
	dataFormatIdentifier	This data-parameter is a one byte value with each nibble encoded separately. The high nibble specifies the "compressionMethod", and the low nibble specifies the "encryptingMethod". The value 0x00 specifies that neither compressionMethod nor encryptingMethod is used. Values other than 0x00 are vehicle manufacturer specific.
	fileSizeUncompressed	Defines the size of the uncompressed file to be download in bytes.
	fileSizeCompressed	Defines the size of the compressed file to be downloaded in bytes.
Parameters (Inout)	None	
Parameters (Out)	maxNumberOfBlockLength	Max number of bytes to be included in each TransferData request excluding the SID and the

		blockSequenceCounter.
	ErrorCode	If the operation Dcm_ProcessRequestAddFile returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response Pending (NRC 0x78)
Description	Callout function. DCM shall call this function to start a RequestFileTransfer process with modeOfOperation equal to 0x01 (AddFile).	
Preconditions	DCM module must be initialised	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.	

8.3.15.2 Dcm_ProcessRequestDeleteFile

Function Name	Dcm_ProcessRequestDeleteFile	
Syntax:	Std_ReturnType Dcm_ProcessRequestDeleteFile (Dcm_OpStatusType OpStatus, uint16 filePathAndNameLength, const uint8* filePathAndName, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are

		set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	filePathAndName Length	Defines the length in bytes for the parameter filePathAndName.
	filePathAndName	Defines the file system location of the server where the file which shall be added, deleted, replaced or read from depending on the parameter modeOfOperation parameter. In addition this parameter includes the file name of the file which shall be added, deleted, replaced or read as part of the file path.
Parameters (Inout)	None	
Parameters (out)	ErrorCode	If the operation Dcm_ProcessRequestAddFile returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response Pending (NRC 0x78)
Description	Callout function. DCM shall call this function to start a RequestFileTransfer process with modeOfOperation equal to 0x02 (DeleteFile).	
Preconditions	DCM module must be initialised	

Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.

8.3.15.3 Dcm_ProcessRequestReplaceFile

Function Name	Dcm_ProcessRequestReplaceFile	
Syntax:	Std_ReturnType Dcm_ ProcessRequestReplaceFile (Dcm_OpStatusType OpStatus, uint16 filePathAndNameLength, const uint8* filePathAndName, uint8 dataFormatIdentifier, uint64 fileSizeUncompressed, uint64 fileSizeCompressed, uint64* maxNumberOfBlockLength, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	filePathAndName Length	Defines the length in bytes for the parameter filePathAndName.
	filePathAndName	Defines the file system location of the server where the file which shall be added, deleted, replaced or read from depending on the parameter modeOfOperation parameter. In addition this parameter includes the file name of the file which shall be added, deleted, replaced or read as part

		of the file path.
	dataFormatIdentifier	This data-parameter is a one byte value with each nibble encoded separately. The high nibble specifies the "compressionMethod", and the low nibble specifies the "encryptingMethod". The value 0x00 specifies that neither compressionMethod nor encryptingMethod is used. Values other than 0x00 are vehicle manufacturer specific.
	fileSizeUncompressed	Defines the size of the uncompressed file to be download in bytes.
	fileSizeCompressed	Defines the size of the compressed file to be downloaded in bytes.
Parameters (Inout)	None	
Parameters (Out)	maxNumberOfBlockLength	Max number of bytes to be included in each TransferData request excluding the SID and the blockSequenceCounter.
	ErrorCode	If the operation Dcm_ProcessRequestReplaceFile returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response

		Pending (NRC 0x78)
Description	Callout function. DCM shall call this function to start a RequestFileTransfer process with modeOfOperation equal to 0x03 (ReplaceFile).	
Preconditions	DCM module must be initialised	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.	

8.3.15.4 Dcm_ProcessRequestReadFile

Function Name	Dcm_ProcessRequestReadFile	
Syntax:	Std_ReturnType Dcm_ProcessRequestReadFile (Dcm_OpStatusType OpStatus, uint16 filePathAndNameLength, const uint8* filePathAndName, uint8 dataFormatIdentifier, uint64* fileSizeUncompressed, uint64* fileSizeCompressed, uint64* maxNumberOfBlockLength, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	filePathAndName Length	Defines the length in bytes for the parameter filePathAndName.
	filePathAndName	Defines the file system location of the server where the file which shall be added, deleted, replaced or read from depending on the

		parameter modeOfOperation parameter. In addition this parameter includes the file name of the file which shall be added, deleted, replaced or read as part of the file path.
	dataFormatIdentifier	This data-parameter is a one byte value with each nibble encoded separately. The high nibble specifies the "compressionMethod", and the low nibble specifies the "encryptingMethod". The value 0x00 specifies that neither compressionMethod nor encryptingMethod is used. Values other than 0x00 are vehicle manufacturer specific.
Parameters (Inout)	None	
Parameters (Out)	maxNumberOfBlockLength	Max number of bytes to be included in each TransferData request excluding the SID and the blockSequenceCounter.
	ErrorCode	If the operation Dcm_ProcessRequestReadFile returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.
	fileSizeUncompressed	Defines the size of the uncompressed file to be download in bytes.
	fileSizeCompressed	Defines the size of the compressed file

		to be downloaded in bytes.
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response Pending (NRC 0x78)
Description	Callout function. DCM shall call this function to start a RequestFileTransfer process with modeOfOperation equal to 0x04 (ReadFile).	
Preconditions	DCM module must be initialised	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.	

8.3.15.5 Dcm_ProcessRequestReadDir

Function Name	Dcm_ProcessRequestReadDir	
Syntax:	Std_ReturnType Dcm_ProcessRequestReadDir (Dcm_OpStatusType OpStatus, uint16 filePathAndNameLength, const uint8* filePathAndName, uint64* dirInfoLength, uint64* maxNumberOfBlockLength, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	filePathAndName	Defines the length in bytes for the parameter filePathAndName.

	Length	
	filePathAndName	Defines the file system location of the server where the file which shall be added, deleted, replaced or read from depending on the parameter modeOfOperation parameter. In addition this parameter includes the file name of the file which shall be added, deleted, replaced or read as part of the file path.
Parameters (Inout)	None	
Parameters (Out)	dirInfoLength	Defines the size of directory information to be uploaded in bytes.
	maxNumberOfBlockLength	Max number of bytes to be included in each TransferData request excluding the SID and the blockSequenceCounter.
	ErrorCode	If the operation Dcm_ProcessRequestReadDir returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response Pending (NRC 0x78)
Description	Callout function. DCM shall call this function to start a RequestFileTransfer process with modeOfOperation equal to 0x05 (ReadDir).	

Preconditions	DCM module must be initialised
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.

8.3.15.6 Dcm_WriteFile

Function Name	Dcm_WriteFile	
Syntax:	Std_ReturnType Dcm_WriteFile (Dcm_OpStatusType OpStatus, uint64 DataLength, uint8* Data, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	DataLength	Defines the length in bytes for the parameter Data. The value will not exceed, but might be less, compared to the value of maxNumberOfBlockLength return in Dcm_ProcessRequestFileTransfer.
	Data	Pointer to the data to be written.
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	If the operation Dcm_WriteFile returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.

Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response Pending (NRC 0x78)
Description	Callout function. DCM shall call this function when data is received using UDS service TransferData if there's an ongoing RequestFileTransfer process started with 0x01 (AddFile) or 0x03 (ReplaceFile).	
Preconditions	DCM module must be initialised	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.	

8.3.15.7 Dcm_ReadFileOrDir

Function Name	Dcm_ReadFileOrDir	
Syntax:	Std_ReturnType Dcm_ReadFileOrDir (Dcm_OpStatusType OpStatus, uint64 DataLength, uint8* Data, Dcm_NegativeResponseCodeType* ErrorCode)	
Sync/Async	Asynchronous	
Reentrancy	Non Reentrant	
Parameters (In)	OpStatus	DCM_INITIAL: All In-parameters are valid. DCM_PENDING: All In-parameters are set to 0x00. DCM_CANCEL: All In-parameters are set to 0x00. DCM_FORCE_RCRRP_OK: All In-parameters are set to 0x00.
	DataLength	As in, the parameter defines the maximum block length to be used, i.e. the value of maxNumberOf-BlockLength sent to the client in the response of RequestFileTransfer.

		As out, the parameter defines the actual length in bytes for the parameter Data. The value shall not exceed, but might be less, the value provided as in parameter.
	Data	Pointer to the data to be written.
Parameters (Inout)	None	
Parameters (Out)	ErrorCode	If the operation Dcm_ReadFileOrDir returns value E_NOT_OK, the DCM module shall send a negative response with NRC code equal to the parameter ErrorCode parameter value.
Return Value	Std_ReturnType	E_OK: Request was successful E_NOT_OK: Request was not successful DCM_E_PENDING: Request is not yet finished DCM_E_FORCE_RCRRP: Application request the transmission of a response Response Pending (NRC 0x78)
Description	Callout function. DCM shall call this function when data is received using UDS service TransferData if there's an ongoing RequestFileTransfer process started with 0x04 (ReadFile) or 0x05 (ReadDir).	
Preconditions	DCM module must be initialised	
Configuration Dependency	This API is available only if configuration parameter DcmDsdSidTabServiceId is configured as 38 and DCM_REQUEST_FILE_TRANSFER_SERVICE are STD_ON.	

8.3.16 참고사항

8.3.16.1 In Communication with application SW-C

RTE 기반 생성된 함수의 프로토타입에 대한 사항은 AUTOSAR BSW Service API Guide.doc 문서 참조

9 Generator

9.1 Generator Option

Option	Description
-S	Software Component Description 생성
-bend	To use big endian (default little endian)
-H/-Help	To display help regarding usage of the tool.
-O/-Output	To generate the output files in the specified directory location.
-V/-Version	To display the copyright information and the tool version.
-L/-Log	To generate ₩"$BswConfig::Lis_File_Name₩" file.
-D/-DryRun	To execute in validation mode.
-I/-Info	To disable Information Messages.
-W/-Warn	To disable Warning Messages.
-DDT	To disable the generation of Date and Time Information in the Tool Generated Output Files.

9.2 Generator Error Message

This section helps to analyze the errors or warnings displayed during the execution of the tool. It ensures conformance of input file(s) with syntax and semantics.

The Generation Tool displays errors or warnings or information when the user has configured incorrect inputs. The format of Error/Warning/Information message is as shown below:

- ERR/WRN/INF<mid><xxx>: < Error/Warning/Information Message>

  Where,

  <mid>: 053 – Dcm Module Id (53) for user configuration checks.

  000 - for command line checks.

  <xxx>: 001 - 999 - Message ID.

- File Name : Name of the file in which the error has occurred
- Path : Absolute path of the container in which the parameter is present

'File Name' and 'Path' are optional.

Below section provides the list of module specific error, warning and information messages.

9.2.1 Error Messages

ERR053001: Unexpected Error Found. Please contact AUTRON AUTOSAR Support System.

This is an Unexpected Error. On the occurrence of this error contact AUTRON AUTOSAR Support System.

ERR053002: Unexpected Error Found. This error may be due to the incorrect configuration of the element(s) <Parameter Name/ Container Name>. If the error is not resolved, then please contact AUTRON AUTOSAR Support System.

This error occurs, if the structure fields that are to be generated in the C Source file are empty. Contact AUTRON AUTOSAR Support System.

ERR053003: 'Component Name' Component is not present in the input file(s).

This error occurs, if any of the component DCM PDUR DEM NVM and COMM (are) not present in any of the input ECU Configuration Description File(s).

ERR053004: The reference path is empty for the parameter 'parameter name' in the container 'container name', having short name 'short name'.

This error occurs, if no reference path is provided for any of the below mentioned parameters:

Container Name	Parameter Name
DcmDcmDslPeriodicTransmission	DcmPeriodicTransmissionConRef

Container Name	Parameter Name
DcmDcmDslResponseOnEvent	DcmROEConnectionRef
DcmDslBuffer	DcmProtocolRxBufferId
	DcmProtocolTxBufferId
	DcmPeriodicTxBufferRef
DcmDsdServiceIdTable	DcmProtocolSIDTable
DcmDspSession	DcmSessionRef
DcmDspDid	DcmDidRef
DcmDspDidInfo	DcmDidInfoRef
DcmData	DcmDataRef
DcmDataInfo	DcmDataInfoRef
DcmNvMBlockDescriptor	DcmDataBlockIdRef
DcmDemPidDataElement	DcmPidDataDemRef
DcmDspRoutineAuthorization	DcmRoutineSessionRef
	DcmRoutineModeRuleRef
	DcmReadSessionRef
	DcmControlSessionRef
	DcmSubServiceSessionRef
	DcmSidTabSessionLevelRef
DspTestResultTid	DcmTestResultObdmidTidRef

Container Name	Parameter Name
DcmDspSecurityRow	DcmReadMemoryRangeSecurityRef
	DcmWriteMemoryRangeSecurityRef
	DcmRoutineSecurityLevelRef
	DcmSourceDidSecurityLevelRef
	DcmReadSecurityLevelRef
	DcmControlSecurityLevelRef
	DcmSubServiceSecurityRef
	DcmSidTabSecLevelRef
DcmDspRoutineInfo	DcmRoutineInfoRef
DcmModeRule	DcmComReEnabledModeRuleRef
	DcmControlDTCReEnableModeRuleRef
	DcmWriteModeRuleRef
	DcmReadModeRuleRef
	DcmControlModeRuleRef
	DcmSubServiceModeRuleRef
	DcmSidTabModeRuleRef
DcmModeRule|ModeCondition	DcmArgumentRef

ERR053005: The parameter 'Parameter Name' in the container 'Container Name' should be configured.

This error occurs, if the parameter 'Parameter Name' in the container 'Container Name' is not configured.

Container Name	Parameter Name
DcmGeneral	DcmDevErrorDetect
	DcmVersionInfoApi
	DcmRespondAllRequest
	DcmManufacturerEnabled
	DcmSupplierEnabled
	DcmTaskTime
DcmDsdServiceIdTable	DcmSidTabId
DcmDsdService	DcmSidTabServiceId
	DcmSidTabSubfuncAvail
DcmDslBuffer	DcmBufferSize
DcmDslDiagResp	DcmMaxNumRespPend
DcmDslProtocolRow	DcmProtocolId
	DcmProtocolIsParallelExecutab
	DcmProtocolPreemptTimeout
	DcmProtocolPriority
	DcmProtocoltransType
DcmDslProtocolRx	DcmProtocolRxAddrType
	DcmRxChannelId
	DcmRxTesterSource

Container Name	Parameter Name
	DcmProtocolRxPduId
DcmDslProtocolTx	DcmConfirmationPduId
DcmData	DcmDataSize
	DcmDataUsePort
DcmDataInfo	DcmDataFixedLength
DcmDspDid	DcmDidIdentifier
	DcmDidUsed
DcmDidInfo	DcmDynamicallyDefined
DcmReadMemoryRangeInfo	DcmReadMemoryRangeHigh
	DcmReadMemoryRangeLow
DcmWriteMemoryRangeInfo	DcmWriteMemoryRangeHigh
	DcmWriteMemoryRangeLow
DcmDspRoe	DcmInitOnDSC
	DcmInterMessageTime
	DcmRoeMaxNumberOfRetry
DcmDspRoeQueue	DcmMaxEventLength
	DcmRoeQueueEnab
	DcmMaxQueueLength
DcmDspRequestControl	DcmRequestControlInBufferSize

Container Name	Parameter Name
	DcmDspRequestControlOutBufferSize
	DcmRequestControlTestId
DcmDspRoutine	DcmRoutineIdentifier
	DcmRoutineUsePort
	DcmRoutineFixedLength
	DcmRoutineUsed
	DcmRequestResultsRoutineSupported
	DcmStopRoutineSupported
DcmRoutineStopInSignal	DcmRoutineSignalLength
	DcmRoutineSignalPos
	DcmRoutineSignalType
DcmRoutineStopOutSignal	DcmRoutineSignalLength
	DcmRoutineSignalPos
	DcmRoutineSignalType
DcmStartRoutineInSignal	DcmRoutineSignalLength
	DcmRoutineSignalPos
	DcmRoutineSignalType
DcmStartRoutineOutSignal	DcmRoutineSignalLength
	DcmRoutineSignalPos

Container Name	Parameter Name
	DcmRoutineSignalType
DcmRoutineRequestResOutSignal	DcmRoutineSignalLength
	DcmRoutineSignalPos
	DcmRoutineSignalType
DcmDspPid	DcmPidIdentifier
	DcmPidSize
	DcmPidService
	DcmPidUsed
DcmDspPidData	DcmPidDataPos
	DcmPidDataSize
DcmPidService	DcmPidDataUsePort
DcmPidSupportInfo	DcmPidSupportInfoLen
	DcmPidSupportInfoPos
DcmDspSecurity	DcmDspSecurityMaxAttemptCounterReadoutTime
DcmDspSecurityRow	DcmSecurityDelayTime
	DcmSecurityDelayTimeOnBoot
	DcmSecurityKeySize
	DcmSecurityLevel
	DcmSecurityNumAttDelay

Container Name	Parameter Name
	DcmSecuritySeedSize
	DcmDspSecurityAttemptCounterEnabled
DcmDspSessionRow	DcmSessionP2ServerMax
	DcmSessionP2StarServerMax
	DcmSessionBoot
DcmDspTestResultObdMidTid	DcmTestResultObdmid
DcmDspTestResultObdMidTids	DcmTestResultObdmidTidUaSid
DcmDspTestResultTid	DcmTestResultTestId
DcmDspVehInfo	DcmVehInfoInfoType
DcmDspVehInfoData	VehInfoDataOrder
	DcmVehInfoDataSize
	DcmVehInfoDataUsePort
DcmPageBufferCfg	DcmPagedBufferEnabled

ERR053006: The value configured for the parameter 'Parameter Name' in the container 'Container Name' should follow the pattern: <Pattern>

This error occurs, when the parameter 'Parameter Name' is not configured as per the pattern.

Parameter Name	Container Name	Pattern	Example
ArReleaseVersion	BSW-IMPLEMENTATION	4. of [0-9]+. of [0-9]+	4.0.3
SwVersion		1. of [0-9]+. of [0-9]+	1.0.0

Parameter Name	Container Name	Pattern	Example
DcmDataConditionCheckreadFnc	DcmData	[a-zA-Z][a-zA-Z0-9₩_]*	Adc
DcmDataEcuSignal			
DcmDataFreezeCurrentStateFnc			
DcmDataGetScalingInfoFnc			
DcmDataReadDataLengthFnc			
DcmDataReadEcuSignal			
DcmDataReadFnc			
DcmDataResetToDefaultFnc			
DcmDataReturnControlToEcuFnc			
DcmDataShortTermAdjustmentFnc			
DcmDataWriteFnc			
DcmDataWriteFnc	DcmDspRequestControl	[a-zA-Z][a-zA-Z0-9₩_]*	Adc
DcmRequestResultsRoutineFnc	DcmDspRoutine	[a-zA-Z][a-zA-Z0-9₩_]*	Adc
DcmStartRoutineFnc			
DcmStopRoutineFnc			
DcmPidDataReadFnc	DcmPidService01	[a-zA-Z][a-zA-Z0-9₩_]*	Adc
DcmGetSeedFnc	DcmDspSecurityRow	[a-zA-Z][a-zA-Z0-9₩_]*	Adc

ERR053013: The reference path <value> provided for the parameter 'Parameter' in the container 'Container Name', having short name 'short name' is incorrect.

This error occurs, if reference provided for any of the below mentioned parameters is incorrect:

Container Name	Parameter Name
DcmDcmDslPeriodicTransmission	DcmPeriodicTransmissionConRef

Container Name	Parameter Name
DcmDcmDslResponseOnEvent	DcmROEConnectionRef
DcmDslBuffer	DcmProtocolRxBufferId
	DcmProtocolTxBufferId
	DcmPeriodicTxBufferRef
DcmDsdServiceIdTable	DcmProtocolSIDTable
DcmDspSession	DcmSessionRef
DcmDspDid	DcmDidRef
DcmDspDidInfo	DcmDidInfoRef
DcmData	DcmDataRef
DcmDataInfo	DcmDataInfoRef
DcmNvMBlockDescriptor	DcmDataBlockIdRef
DcmDemPidDataElement	DcmPidDataDemRef
DcmDspSessionRow	DcmRoutineSessionRef
	DcmRoutineModeRuleRef
	DcmReadSessionRef
	DcmControlSessionRef
	DcmSubServiceSessionRef
	DcmSidTabSessionLevelRef
DspTestResultTid	DcmTestResultObdmidTidRef

Container Name	Parameter Name
DcmDspSecurityRow	DcmReadMemoryRangeSecurityRef
	DcmWriteMemoryRangeSecurityRef
	DcmRoutineSecurityLevelRef
	DcmSourceDidSecurityLevelRef
	DcmReadSecurityLevelRef
	DcmControlSecurityLevelRef
	DcmSubServiceSecurityRef
	DcmSidTabSecLevelRef
DcmDspRoutineInfo	DcmRoutineInfoRef
DcmModeRule	DcmComReEnabledModeRuleRef
	DcmControlDTCReEnableModeRuleRef
	DcmWriteModeRuleRef
	DcmReadModeRuleRef
	DcmControlModeRuleRef
	DcmSubServiceModeRuleRef
	DcmSidTabModeRuleRef
DcmDslProtocolRx	DcmDslProtocolRxComMChannelRef
DcmDspComControlSpecificChannel	DcmDspSpecificComMChannelRef
DcmModeRuleModeCondition	DcmArgumentRef

ERR053017: Value of the parameter 'DcmDspMaxPeriodicScheduler' in the container ' DcmDsp' should be

greater than the value of the parameter 'DcmDspMaxPeriodicDidToRead' in the container 'DcmDsp'.

This error occurs, if value of the parameter DcmDspMaxPeriodicScheduler is less than DcmDspMaxPeriodicDidToRead

ERR053022: Value of the parameter 'DcmTaskTime' in the container 'DcmGeneral' should not be configured as <0>.

This error occurs, if value of the parameter DcmTaskTime == 0

ERR053051: The reference parameter 'DcmDslPeriodicTxPduRef ' should have a corresponding match in PduR module.

This error occurs, if value of the parameter 'DcmDslPeriodicTxPduRef' is not having a corresponding match in PduR module.

ERR053052: As value of parameter 'DcmDsdSidTabServiceId' is configured as <16 or 17 or 39 or 62 or 133 or 44 or 49 or 25 or 134>, then value of the parameter 'DcmDsdModeCondition' should be configured as <true/1> in the container ' DcmDsdService'.

This error occurs, if, the value of parameter 'DcmDsdSidTabServiceId' is configured as <16 or 17 or 39 or 62 or 133 or 44 or 49 or 25 or 134>, and the value of the parameter 'DcmDsdSidTabSubfuncAvail' is not configured as <true/1> in the container 'DcmDsdService'

ERR053053: The value of parameters 'DcmBswModeRef' and 'DcmSwcModeRef' should not be configured at a time in the container 'DcmDsdModeCondition'.

This error occurs, if the value of parameters 'DcmBswModeRef' and 'DcmSwcModeRef' is configured at a time in the container 'DcmDsdModeCondition'

ERR053054: The value of parameter 'Parameter Name' should be unique for each configured 'Container Name' container.

This error occurs, if the value of parameter 'Parameter Name' is not unique for each configured 'Container Name' container

Container Name	Parameter Name
DcmModeRule	DcmArgumentRef
DcmDspSecurityRow	DcmDspSecurityLevel
DcmDsdModeCondition	DcmBswModeRef
DcmDspSessionRow	DcmDspSessionLevel
DcmDsdServiceIdTable	DcmDsdSidTabId
DcmDsdServiceIdTable	DcmDsdSubService
DcmDslProtocolRow	DcmDslProtocolID
DcmDslPeriodicConnection	DcmDslPeriodicTxPduRef
DcmDslProtocolTx	DcmDslProtocolTxPduRef
DcmDspDid	DcmDspDidIdentifier
DcmDspPid	DcmDspPidIdentifier

ERR053055: The value of parameter 'DcmLogicalOperator' should be configured in the container 'DcmModeRule' when argumentref is configured more than one.

This error occurs, if Value of the parameter ‘DcmLogicalOperator’ in the container ‘DcmModeRule’ is not configured, if the parameter ‘DcmArgumentRef’ is more than 〈1〉)

ERR053056: As ServiceId is configured as 〈9〉 and ' DcmDspVehInfoInfoType' is configured as 〈8 or 11〉, the function name configured for parameter 'DcmDspVehInfoDataReadFnc' in container 'DcmDspVehInfo' should point to correct function provided by DEM and parameter 'DcmDspVehInfoUsePort' should be configured as 〈false〉.

This error occurs, if the value of parameter 'DcmDspVehInfoDataReadFnc' is configured as ‘Dem API(s)’ and the value of the parameter ‘DcmDspVehInfoUsePort’ is configured as 〈false/0〉, if the value of the parameter ‘DcmDspVehInfoInfoType’ is configured as 〈8 or 11〉

ERR053057: If the Value of the parameter 'DcmDslProtocolTransType' is Configured as 〈TYPE2〉 and also the value for the parameter ‘DcmDslProtocolIsParallelExecutab' is configured as 〈true/1〉, then atleast one periodic connection needs to be configured.

This error occurs, if the value of parameter 'DcmDslProtocolIsParallelExecutab' is configured as 〈false/0〉 and the value of the parameter ‘DcmDslProtocolTransType’ is configured as 〈TYPE2〉 and container ‘DcmDslPeriodicConnection’ is not configured

ERR053058: As the parameter 'DcmDslProtocolId’ is configured as 〈DCM_OBD_ON_CAN〉, value of the parameter 'DcmDsdSidTabServiceId’' in the container 'DcmDsdService’ should be configured as one of the following Protocol IDs 〈1,2,3,4,6,7,8,9,10〉.

This error occurs, if the value of parameter 'DcmDslProtocolId' is configured as 〈DCM_OBD_ON_CAN〉 in the container ‘DcmDslProtocolRow’, then the value of the parameter ‘DcmDsdSidTabServiceId’ is not configured as one of the following 〈1 or 2 or 3 or 4 or 6 or 7 or 8 or 9 or 10

ERR053059: Value 〈0 or 32 or 64 or 96 or 128 or 160 or 192 or 224〉 configured for parameter 'Parameter Name' in container 'Container Name' is invalid.

This error occurs, if the parameter ‘Parameter Name’ is configured as 〈0 or 32 or 64 or 96 or 128 or 160 or 192 or 224 in the container ‘Container Name’.

Container Name	Parameter Name
DcmDspVehInfo	DcmDspVehInfoInfoType
DcmDspTestResultObdMid	DcmDspTestResultObdMidTid
DcmDspRequestControlTestId	DcmDspRequestControl

ERR053060: If the value of the parameter 'DcmDspRoeQueueEnabled' is configured as <TRUE/1>, then the container 'DcmDspExtRoe' needs to be configured.

This error occurs, if the value of the parameter 'DcmDspRoeQueueEnabled' is configured as <TRUE/1> then the container 'DcmDspExtRoe' needs to be configured.

ERR053061: Since the value of the parameter 'DcmDsdSidTabServiceId' is configured as <54>, Atleast one instance of the parameter 'DcmDsdSidTabServiceId' in the container 'DcmDsdService' should be configured as <52> and <53>.

This error occurs, if Atleast one instance of the parameter 'DcmDsdSidTabServiceId' in the container 'DcmDsdService' is not configured as <52> and <53>, since the value of the parameter 'DcmDsdSidTabServiceId' is configured as <54>

ERR053062: Since the value of the parameter ' DcmDsdSidTabServiceId ' is configured as <55>, the value of the parameter ' DcmDsdSidTabServiceId ' should be configured as <54>.

This error occurs, if the value of the parameter 'DcmDsdSidTabServiceId' is not configured as <54>, since the value of the parameter ' DcmDsdSidTabServiceId ' is configured as <55>.

ERR053063: The value of parameter 'Parameter Name1' should be multiple of the configured value for parameter 'Parameter Name2'.

This error occurs, if the value of the parameter 'Parameter Name1' in the container 'Container Name' is not multiple of the parameter 'Parameter Name2'.

Container Name	Parameter Name
DcmDspSecurity	DcmDspSecurityMaxAttemptCounterReadoutTime
DcmDspSecurityRow	DcmDspSecurityDelayTime
	DcmDspSecurityDelayTimeOnBoot
DcmDspSessionRow	DcmDspSessionP2ServerMax

Container Name	Parameter Name
	DcmDspSessionP2StarServerMax
DcmDslProtocolRow	DcmDslProtocolPreemptTimeout
	DcmTimStrP2ServerAdjust

ERR053064: As parameter 'DcmDsdSidTabServiceId' in container 'DcmDsdService' is configured as <Value>, container 'Container Name' should be configured."

This error occurs, if the value of the parameter DcmDsdSidTabServiceId' is configured as <Value>, then the container 'Container Name' is not configured.

Container Name	Value
DcmDspPid	1 or 2
DcmDspTestResultObdMid	6
DcmDspRequestControl	8
DcmDspVehInfo	9
DcmDspDid	34 or 36 or 42 or 44 or 46 or 47
DcmDspRoutine	49
DcmDspReadMemoryRangeInfo	61
DcmDspWriteMemoryRangeInfo	35
DcmDslReponseOnEvent	134
DcmDspComControl	40

ERR053065: The value of parameter 'DcmDsdSidTabServiceId' should be <Value> in the container 'DcmDsdService'.

This error occurs, if the value of the parameter DcmDsdSidTabServiceId' is not configured as <Value> in the container 'DcmDsdService'.

Value
16
39
62
133
20
25
34
36
42
44
46
47
49
52
134
53
54

Value
55
61
132
1
2
3
4
6
7
8
9
10

ERR053066: OBD services<DCM_OBD_ON_CAN/DCM_OBD_ON_FLEXRAY/DCM_OBD_ON_IP> should always have higher priority than other UDS services.

This error occurs, if the OBD Services <DCM_OBD_ON_CAN/DCM_OBD_ON_FLEXRAY/DCM_OBD_ON_IP> are configured a lower priority than other UDS services.

ERR053067: The Value of the parameter ' DcmDspMaxPeriodicDidScheduler ' should be configured as 0x01, when value of the parameter 'DcmDslProtocolTransType' is configured as Type1, for all the instances of the container 'DcmDslProtocolRow'.

This error occurs, if the Value of the parameter 'DcmDspMaxPeriodicDidScheduler' is not 0x01, when the value

of the parameter 'DcmDslProtocolTransType' is configured as Type1, for all the instances of the container 'DcmDslProtocolRow'.

ERR053068: The Value of the parameter 'DcmDslProtocolRxBufferId' and value of the parameter ' DcmDslProtocolTxBufferId' in the container 'DcmDslProtocolRow ' should always be unique.

This error occurs, if the Value of the parameter 'DcmDslProtocolRxBufferId' and value of the parameter ' DcmDslProtocolTxBufferId' in the container 'DcmDslProtocolRow' are same.

ERR053069: The value of the parameter 'DcmDspMaxPeriodicDidScheduler' should be equal to the number of instances of the container 'DcmDslPeriodicConnection'.

This error occurs, if the value of the parameter 'DcmDspMaxPeriodicDidScheduler' is not equal to the number of instances of the container 'DcmDslPeriodicConnection'.

ERR053070: The Value(s) configured for the parameter 'DcmDslProtocolRxPduId' in the Container 'DcmDslProtocolRx' should be sequential.

This error occurs, if the value(s) configured for the parameter 'DcmDslProtocolRxPduId' in the Container 'DcmDslProtocolRx' are not sequential.

ERR053071: The value of the parameter "DcmDspDataSize" should be configured in the range of ((1 – 8) or (9 – 16) or (17 – 32)) (a value 8 or 16 or 32) when the parameter "DcmDspDataType" in container "DcmDspData" is configured as <UINT8/UINT16/UINT32/ SINT8/SINT16/SINT32>.

This error occurs, if the parameter 'DcmDspDataSize' is not configured in the range of ((1 – 8) or (9 – 16) or (17 – 32)), when the parameter 'DcmDspDataType' in container 'DcmDspData' is configured as <UINT8/UINT16/UINT32/SINT8/SINT16/SINT32> in case S/R.

ERR053074: The value of the parameter 'DcmDspDataType' should be configured as UINT8, since the value of the parameter 'DcmDspDataUsePort' is configured as <USE_BLOCK_ID/ USE_DATA_SYNCH_FNC/USE_DATA_ASYNCH_CLIENT_SERVER/ USE_DATA_SYNCH_CLIENT_SERVER/ /USE_DATA_ASYNCH_FNC> in the container 'DcmDspData'.

To check whether tool provides an error message, if the value of the parameter 'DcmDspDataType' is not configured as <UINT8>, when the value of the parameter 'DcmDspDataUsePort' is configured as <USE_BLOCK_ID/USE_DATA_SYNCH_FNC/USE_DATA_ASYNCH_CLIENT_SERVER/USE_DATA_SYNCH_CLIENT_SERVER/ /USE_DATA_ASYNCH_FNC> in the container 'DcmDspData'.

ERR053075: The value configured for the parameter 'DcmDspSessionP2StarServerMax' should be greater than 0.01s (10 ms) and should be multiple of 10.

To check whether tool provides an error message, if the value configured for the parameter 'DcmDspSessionP2StarServerMax' is less than 0.01s (10 ms) or is not a multiple of 10.

ERR053076: Atleast one instance of the container DcmDslMainConnection should be configured in the container DcmDslConnection.

To check whether tool provides an error message, if atleast one instance of the container 'DcmDslMainConnection' is not configured in the container DcmDslConnection.

ERR053076: Atleast one instance of the container DcmDslMainConnection should be configured in the container DcmDslConnection.

To check whether tool provides an error message, if atleast one instance of the container 'DcmDslMainConnection' is not configured in the container DcmDslConnection.

ERR053200: 'DcmDspDataSize' should not be configured as <0>.

To check whether DcmDspDataSize is a greater than <0> or not.

ERR053201: 'DcmDspDataUsePort' should not be configured as {USE_DATA_SENDER_RECEIVER, USE_BLOCK_ID, USE_ECU_SIGNAL} , since value of the 'DcmDspDataFixedLength' in the container 'DcmDspDataInfo' is configured as <FALSE/0>

Usage of variable data length in case of S/R communication, NvRam access or ECU signal access, In case DcmDspDataUsePort is set to {USE_DATA_SENDER_RECEIVER, USE_BLOCK_ID, USE_ECU_SIGNAL}, the usage of variable data length shall be not allowed.

ERR053202: The value of the parameter 'DcmDspDataType' in the container 'DcmDspData' should be configured as <UINT8>, since value of the 'DcmDspDataFixedLength' in the container 'DcmDspDataInfo' is configured as <FALSE/0>"

Variable data length is only possible with UINT8 arrays with DcmDspDataType set to UINT8 and 'DcmDspDataFixedLength' set to <FALSE>.

ERR053203: DcmDspData elements used in service 0x2F shall not have 'DcmDspDataUsePort' set to USE_DATA_SENDER_RECEIVER.

ERR053204: The value of the parameter 'DcmDspDidDataPos' should be configured a multiple of <8> , since the values of the parameter 'DcmDspDataUsePort' is configured as <'one of all use port'> is configured as <'one of all type'> in the container 'DcmDspData'

Restrictions on bit-wise placement DcmDspDidDataPos Parameter shall address always a byte boundary, except DcmDspDataType is set to BOOLEAN, UINT8 or UINT16 with DcmDspDataSize lower than or equal 16.

ERR053205: "The value of the parameter 'DcmDspDataSize' should be configured a multiple of 8, since the value of the parameter 'DcmDspDataType' is configured as <NvM or C/S> in the container 'DcmDspData'

Restrictions on bit-wise access DcmDspDataSize shall be a multiple of 8 in case NvM or C/S.

ERR053206: The position of the current signal overlap the previous signals

ERR053207: The value of the parameter DcmDspRoutineSignalPos should address always a byte boundary, since the value of the parameter 'DcmDspRoutineSignalType' is configured as < UINT16/UINT32/SINT8/SINT16/SINT32>.

Restrictions on bit-wise placement DcmDspRoutineSignalPos parameter shall address always a byte boundary, except DcmDspRoutineSignalType is set to BOOLEAN or UINT8

ERR053208: The value of the parameter 'DcmDspRoutineSignalLength' should be configured a multiple of 8, since the value of the parameter 'DcmDspRoutineSignalType' is configured as < VARIABLE_LENGTH>.

Restrictions on bit-wise placement DcmDspRoutineSignalPos parameter shall address always a byte boundary, except DcmDspRoutineSignalType is set to BOOLEAN or UINT8

ERR053209: The value of parameter 'DcmDspRoutineSignalLength' should be in the range of ((1 - 8) or (9 - 16) or (17 - 32)) (a value 8 or 16 or 32) since value of the 'DcmDspRoutineSignalType' is configured as <UINT8/UINT16/UINT32/SINT8/SINT16/SINT32>.

This error occurs, if the parameter DcmDspRoutineSignalLength is not configured in the range of ((1 - 8) or (9 - 16) or (17 - 32)), when the parameter DcmDspRoutineSignalType is configured as <UINT8/UINT16/UINT32/SINT8/SINT16/SINT32> in case S/R.

ERR053210: The 'DcmDspRoutineSignalType' could be configured to <VARIABLE_LENGTH> for the last signal and when 'DcmDspRoutineFixedLength' is set to FALSE.

ERR053211: The position of the current signal overlap the previous signals

ERR053212: The position of the current signal overlap the previous signals
If you set the DcmPagedBufferEnabled to true, The value of parameter 'DcmPagedBufferTimeout' should be set to more than twice the configured value for parameter 'DcmTaskTime'.

ERR053213: The value of parameter 'DcmDspSecurityDelayTime' should be 180 to satisfy the DCM_ES95486_SUPPORT/DCM_ES95486_02_SUPPORT/DCM_ES95486_50_SUPPORT
If you set the standard Support value to DCM_ES95486_SUPPORT/DCM_ES95486_02_SUPPORT/DCM_ES95486_50_SUPPORT , The value of parameter 'DcmDspSecurityDelaytime' should be set to 180 to satisfy the ES Document.

ERR053214: The value of parameter 'DcmDspSecurityNumAttDelay' should be 3 to satisfy the DCM_ES95486_SUPPORT/DCM_ES95486_02_SUPPORT/DCM_ES95486_50_SUPPORT
If you set the standard Support value to DCM_ES95486_SUPPORT/DCM_ES95486_02_SUPPORT/DCM_ES95486_50_SUPPORT , The value of parameter 'DcmDspSecurityNumAttDelay' should be set to 3 to satisfy the ES Document.

ERR053215: Because of maximum read memory high range is 32 bits value. If parameter DcmDspSupportedAddressAndLengthFormatIdentifier configured with <CONFIG_VALUE> value. The total of

MemoryAddress + MemorySize maybe be over 32 bits.

If user configure parameter DcmDspSupportedAddressAndLengthFormatIdentifier with **<CONFIG_VALUE>.**

The low nible byte (bit 3-0) of **<CONFIG_VALUE>** must be less or equal than 4. For make sure the The total of MemoryAddress + MemorySize which requested by user should not be overlap (over 32 bits).

ERR053216: Because of parameter DcmDspAuthenticationRoleSize is configured with value <VALUE>. The parameter DcmDsdServiceRole should be configured in range <RANGE>.

If user configurate the parameter **DcmDspAuthenticationRoleSize** with value **<VALUE>** (range 1 to 4). User must configure the parameter DcmDsdServiceRole in **<RANGE>.**

<VALUE> = 1, <RANGE> is 0..255

<VALUE> = 2, <RANGE> is 0..65535

<VALUE> = 3, <RANGE> is 0.. 16777215

<VALUE> = 4, <RANGE> is 0.. 4294967295

ERR053217: If Authentication (0x29) service available, the parameter DcmDslProtocolAuthenticaionConnectionId must be configured.

If user use Authentication Service, user must configure the parameter DcmDslProtocolAuthenticaionConnectionId.

ERR053218: If Authentication (0x29) service available, at least one of container DcmDspAuthenticationConnection must be configured.

If user use Authentication Service, user must configure at least one of container DcmDspAuthenticationConnection.

ERR053219: Because of parameter DcmDspAuthenticationRoleSize is configured with value <VALUE>. The parameter DcmDsdSubServiceRole should be configured in range <RANGE>.

If user configurate the parameter **DcmDspAuthenticationRoleSize** with value **<VALUE>** (range 1 to 4). User must configure the parameter DcmDsdSubServiceRole in **<RANGE>.**

<VALUE> = 1, <RANGE> is 0..255

<VALUE> = 2, <RANGE> is 0..65535

<VALUE> = 3, <RANGE> is 0.. 16777215

<VALUE> = 4, <RANGE> is 0.. 4294967295

ERR053220: If Authentication (0x29) service available, there is a container DcmDsdService must be configured with parameter DcmDsdSidTabServiceId set to 0x29.

If user use Authentication Service, user must configure at least one of container DcmDsdService with DcmDsdSidTabServiceId set to 0x29.

~~**ERR053221: Value(s) configured for the parameter DcmDslProtocolConnectionId in the container DcmDslMainConnection should be unique**~~

~~If user configure value(s) for the parameter DcmDslProtocolConnectionId in the container DcmDslMainConnection duplicately, this error shall occur.~~

~~**ERR053222: Value(s) configured for the parameter DcmDslProtocolConnectionId in the container DcmDslMainConnection should be configured.**~~

~~If user don't configure for the parameter DcmDslProtocolConnectionId in the container DcmDslMainConnection, this error shall occur.~~

ERR053224: If Authentication (0x29) service available and the paramter DcmDspAuthenticationESUsed set to True, Container DcmDspAuthenticationConnection should not be configured
If user set DcmDspAuthenticationConnectionES and DcmDspAuthenticationConnection together, this error shall occur.

ERR053226: The configured white list contain invalid data
If user set invalid value at white list, this error shall occur.

ERR053227: Because of parameter DcmDspAuthenticationRoleSize is configured with value '<role_size>'. The parameter DcmDspAuthenticationAuthenticatedRole should be configured in range <range>.
If user set wrong value at role size, this error shall occur.

ERR053230: If SecurityAccess (0x27) service is used with Crypto R44, the container DcmDspSecurityInfoRow must be configured correctly.
If user don't configure the container DcmDspSecurityInfoRow, this error shall occur.

ERR053231: If SecurityAccess (0x27) service is used with Crypto R40, the parameter related Crypto_R44 should be not set.
If user use Crypto R40 stack but the container DcmDspSecurityInfoRow is set, this error shall occur.

ERR053232: If RequestFileTransfer (0x38) service available, the container DcmDspRequestFileTransfer must be configured.
If user use RequestFileTransfer Service but the container DcmDspRequestFileTransfer isn't configued, this error shall occur.

ERR053233: If RequestFileTransfer (0x38) service use port, the parameter DcmRequestFileTransferMaxFileAndDirName must be configured.
If user use RequestFileTransfer Service with port but the paramter DcmRequestFileTransferMaxFileAndDirName isn't configued, this error shall occur.

ERR053234: The value of parameter 'parameter' shall be present only if 'DcmDspSecurityUsePort' is set to USE_ASYNCH_FNC and 'DcmDspSecurityAttemptCounterEnabled' is set to TRUE.
This error occurs, when a user uses DcmDspSecurityGetAttemptCounterFnc or DcmDspSecuritySetAttemptCounterFnc without DcmDspSecurityUsePort set to USE_ASYNCH_FNC and DcmDspSecurityAttemptCounterEnabled set to TRUE.

Container Name	Parameter Name
DcmDspSecurityRow	DcmDspSecurityGetAttemptCounterFnc
	DcmDspSecuritySetAttemptCounterFnc

9.2.2 Warning Messages

None.

9.2.3 Information Messages

INF053015: AUTOSAR Release version <Version> configured for the parameter 'AR-RELEASE-VERSION' in provided MDT file is not correct. AUTOSAR Release version should be one of the following: <Versions>.

This information message occurs, if the value of the element AR-RELEASE-VERSION present in the BSW Module Description template is configured other than 4.0.3

INF053051: Tool Expects user to configure DcmCpuByteOrder as (0/1), by default tool will consider LITTLE_ENDIAN (0). For BIG_ENDIAN (1), (-bend) needs to be passed in Commandline.

This information message occurs, if the user does not configure DcmCpuByteOrder as (0/1) in Commandline.

10 Det Errror

Detected development errors shall be reported to the Det_ReportError() service of the Development Error Tracer (DET) if Det error dection is enabled.

There is only one operation used as service from Development Error Tracer. In C-style, it looks as follows:

Std_ReturnType Xxx_ReportError(uint8 InstanceId, uint8 ApiId, uint8 ErrorId);

Note: ModuleId can be used in "port defined argument value".

10.1Error classification

Type or error	*Relevance*	*Related error code*	*Value*
Interface: Timeout occurred during interaction with another module (e.g. maximum number of response pending is reached, refer	Development	DCM_E_INTERFACE_TIMEOUT	0x01

Type or error	*Relevance*	*Related error code*	*Value*
to SWS_Dcm_00120)			
Interface return-value is out of range	Development	DCM_E_INTERFACE_RETURN_VALUE	0x02
Interface: Boundary check of buffers provided by the Dcm failed during interaction with another module (application, Dem, PduR, etc.)	Development	DCM_E_INTERFACE_BUFFER_OVERFLOW	0x03
Internal: DCM not initialized	Development	DCM_E_UNINIT	0x05
DCM API function with invalid input parameter	Development	DCM_E_PARAM	0x06
DCM API service invoked with NULL POINTER as parameter	Development	DCM_E_PARAM_POINTER	0x07
Dcm initialisation failed	Development	DCM_E_INIT_FAILED	0x08

10.1.1 Service ID

Dcm function name	*Service ID[hex]*
Dcm_Init	0x01
Dcm_GetVersionInfo	0x24
Dcm_DemTriggerOnDTCStatus	0x2B
Dcm_<ModeName>ModeEntry	0x2C

Dcm function name	*Service ID[hex]*
Dcm_GetSecurityLevel	0x0D
Dcm_GetSesCtrlType	0x06
Dcm_GetActiveProtocol	0x0F
Dcm_ResetToDefaultSession	0x2A
Dcm_TriggerOnEvent	0x2D
Dcm_StartOfReception	0x00
Dcm_CopyRxData	0x02
Dcm_TpRxIndication	0x03
Dcm_CopyTxData	0x04
Dcm_TpTxConfirmation	0x05
Dcm_ComM_NoComModeEntered	0x21
Dcm_ComM_SilentComModeEntered	0x22
Dcm_ComM_FullComModeEntered	0x23
Dcm_Confirmation	0x29
Dcm_MainFunction	0x25
Dcm_StopROE	0x2e
Dcm_RestartROE	0x2f
Dcm_ExternalSetNegResponse	0x30
Dcm_ExternalProcessingDone	0x31
Dcm_SetDeauthenticatedRole	0x79
Dcm_Authentication_Function	0x41

Callout function name	*Service ID[hex]*
Dcm_ReadMemory	0x26
Dcm_WriteMemory	0x27
Dcm_ProcessRequestTransfertExit	0x32
Dcm_ProcessRequestUpload	0x31
Dcm_ProcessRequestDownload	0x30
Xxx_ReadData	0x34

Xxx_ReadData async	0x3b
Xxx_WriteData fixed	0x35
Xxx_WriteData	0x3e
Xxx_ReadDataLength	0x36
Xxx_ConditionCheckRead	0x37
Xxx_GetScalingInformation	0x38
Xxx_ReturnControlToECU	0x39
Xxx_ResetToDefault	0x3c
Xxx_FreezeCurrentState	0x3a
Xxx_ShortTermAdjustment	0x3d
Xxx_IsDidAvailable	0x3F
Xxx_ReadDidData	0x40
Xxx_WriteDidData	0x41
Dcm_ExternalSetNegResponse	0x30
Dcm_ExternalProcessingDone	0x31
〈Module〉_〈DiagnosticService〉	0x32
〈Module〉_〈DiagnosticService〉_〈SubService〉	0x33

11 Appendix

11.1 ES95486 Support

11.1.1 Type Definitions

11.1.1.1 Dcm_CertificationInfoType

Name:	Dcm_CertificationInfoType		
Type:	Structure		
Element:	uint8*	authorization	The authorization information of certification. This variable is array with 4 bytes size.
	uint8*	expirationDate	The expiration date information of certification. This variable is array with 3 bytes size.

11.1.2 Interfaces

11.1.2.1 DCMServices

11.1.2.1.1 Dcm_GetCertificationInfo

Function Name	Dcm_GetCertificationInfo	
Syntax:	Std_ReturnType Dcm_GetCertificationInfo (Dcm_CertificationInfoType *LpCertifInfo)	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters	LpCertiInfo	information of certification

(Out)		
Return Value	Std_ReturnType	E_OK: Current security level is 0x21. LpCertiInfo are valid. E_NOT_OK: RandomSeed is invalid
Description	This function returns the field information of certification. The field information includes 'Certificate Expiration Date' and 'Certificate Holder Reference : Authorization'. Certificate Holder Reference : Authorization structure is like below.	
Precondition	Security level using CSAC algorithm is unlock	

Certification Holder Reference

Bit31..24	Bit23	Bit22	Bit21	Bit20..16	Bit15	Bit2	Bit1	Bit0
…	SubCA(1) or End Entity(0)	CGW	All Internal ECU	For future use		Group#3	Group#2	Group#1
Reserved	Role	Target			Permission			

11.1.2.2 Callout Function

11.1.2.2.1 Dcm_GetRandomSeed

Function Name	Dcm_GetRandomSeed	
Syntax:	Std_ReturnType Dcm_GetRandomSeed (uint8* RandomSeed)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	RandomSeed	RandomSeed To be applied to the C-SAC platform
Return Value	Std_ReturnType	E_OK: RandomSeed is valid Apply user randomseed in platform E_NOT_OK: RandomSeed is invalid
Description	This function is used to update the RandomSeed used in the C-SAC algorithm.	

Precondition	Use a SecurityLeveL L21 (CSAC)

11.1.2.2.2 Dcm_GetPublicKey

Function Name	Dcm_GetPublicKey	
Syntax:	void Dcm_GetPublicKey (uint8* PublicKey)	
Sync/Async	Synchronous	
Reentrancy	Non Reentrant	
Parameters (In)	None	
Parameters (Inout)	None	
Parameters (Out)	PublicKey	Public key for certificate authentication
Return Value	none	-
Description	This function is used to update the RandomSeed used in the C-SAC algorithm.	
Precondition	Use a SecurityLeveL L21 (CSAC)	

11.1.3 Callout Function Guide

11.1.3.1 C-SAC 적용 시 Dcm_GetRandomSeed() 를 통한 Seed 업데이트

Note: 본 가이드는 **진성난수가 아닌 의사난수(HAC Random)를 사용하는** Security Level 0x21 (C-SAC) 알고리즘 이용시 필수 적용 사항

C-SAC 적용 시 Random 성 향상을 위해 Application 에서 Callout Code 를 통해 RandomSeed 를 업데이트 한다.
Dcm 에서 제공되는 Dcm_GetRandomSeed()의 전달인자 RandomSeed[16]에 Random 성이 보장된 RandomSeed 값을 적용한다. Dcm_GetRandomSeed() callout 함수의 호출 시점은 다음과 같다.

1) 최초 C-SAC 요청 시
2) HacRandomGenerate 의 Entropy 소진 시 (return CAL_E_ENTROPY_EXHAUSTION)

플랫폼은 Dcm_GetRandomSeed 의 Return 값을 보고 사용자 RandomSeed 적용 유무를 판단하므로 Application 에서 Seed 업데이트 이후 Callout 함수의 Return 값을 반드시 E_OK 로 적용해야한다.

Return Value	Description
E_OK	사용자 RandomSeed 를 적용함. RandomSeed 업데이트 시 반드시 E_OK return.
E_NOT_OK	부정응답(0x33)

Callout 함수에 대한 자세한 설명은 [Appendix 10.1 ES95489 Support]의 Interfaces 를 참고한다.

11.1.3.2 자체 Fbl 구현된 C-SAC 적용 제어기에서 Dcm_GetPublickKey()를 통한 PublicKey 제공

Note: 본 가이드는 오토에버 Fbl 미사용, Security Level 0x21 (C-SAC) 알고리즘 적용하는 경우 필수 적용 사항

C-SAC 인증서 인증시 사용되는 PublicKey 는 오토에버 Fbl 에서 제공한다. 만약 오토에버 Fbl 을 사용하지 않고 Bootloader 를 자체적으로 구현한 경우라면, C-SAC 인증서 인증을 위한 PublicKey 를 플랫폼에 제공해주어야 한다.
Dcm_Ecud.arxml 설정파일 내 DcmGeneral/DcmAutonFblUsed 설정이 False 이면 Dcm_GetPublicKey() callout 함수가 제공된다. 전달인자 PublicKey[256]에 자체 보유한 PublicKey 를 적용해야한다.

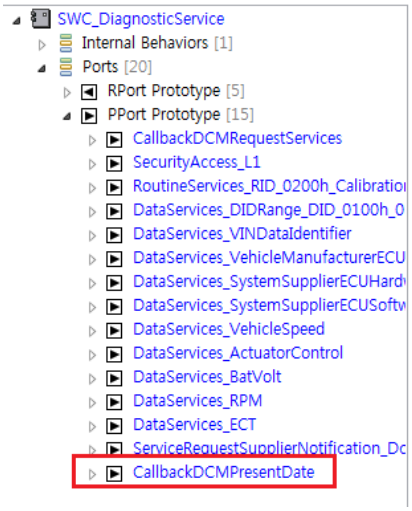
**Asims

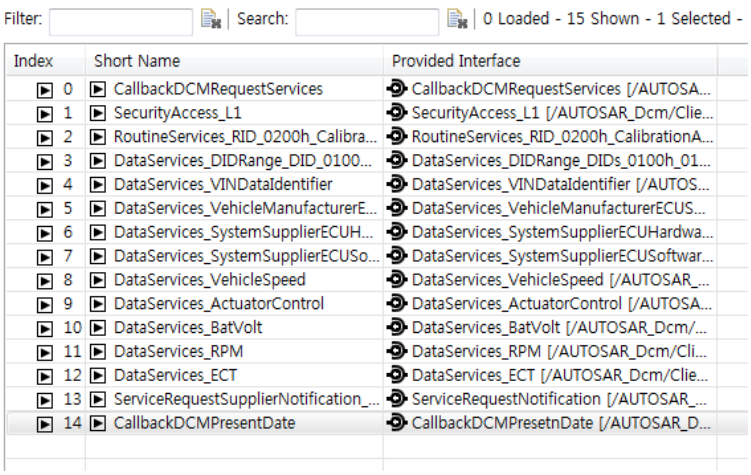
Callout 함수에 대한 자세한 설명은 [Appendix 10.1 ES95489 Support]의 Interfaces 를 참고한다.

11.1.4 Security Access 2.0 Guide

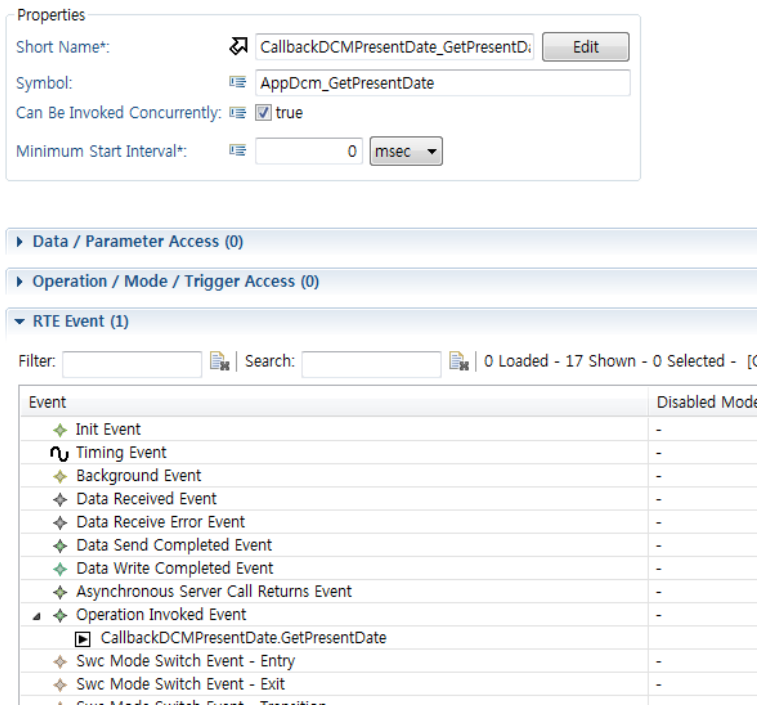
1. Security Access 2.0 기능을 정상적으로 사용하기 위해서는 Application에서 Dcm으로 현재 날짜 정보를 제공해 주야 하고, 이것을 위해서 P-Port와 Runnable, API를 추가해야 한다.

11.1.4.1.1 P-Port 추가





11.1.4.1.2 Runnable 추가



11.1.4.1.3 API 추가 및 날짜 저장

AppDcm_GetPresentDate

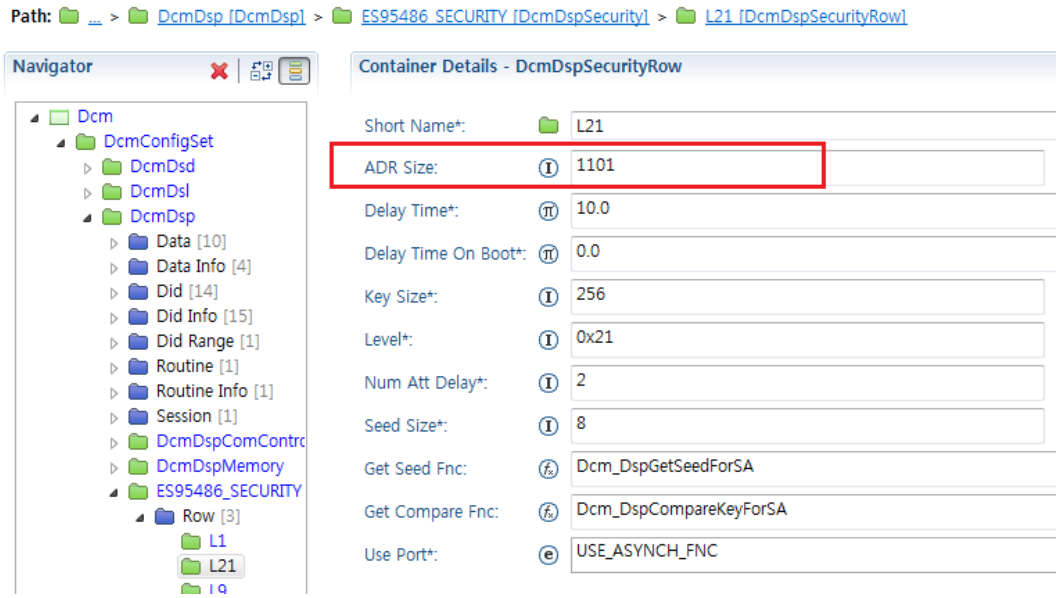
```
FUNC(Std_ReturnType, RTE_CODE) AppDcm_ GetPresentDate (
OUT P2VAR(uint8, AUTOMATIC, RTE_APPL_DATA) Data)
{
 Std_ReturnType LddRetVal = RTE_E_OK;

  /*
  * Apply present date to Data.
  * present date is a 3-row array.
  * Data[0] = year(h), Data[1] = month(h), Data[2] = day(h)
  * ex) 2020. 02.25
  * Data[0] = 0x20;
  * Data[1] = 0x02;
  * Data[2] = 0x25;
  */

  Data[0] = 0x20;
  Data[1] = 0x02;
  Data[2] = 0x25;

  return LddRetVal;
}
```

예를 들어 현재 날짜가 2020 년 2 월 25 일 인 경우,
Date[0] = 0x20
Date[1] = 0x02

Date[2] = 0x25 의 형태로 저장해야 한다.
또한, Application 에서 현재 날짜가 정상적으로 저장되었는지 유효성을 체크해야 한다.

2. ADR Size 설정

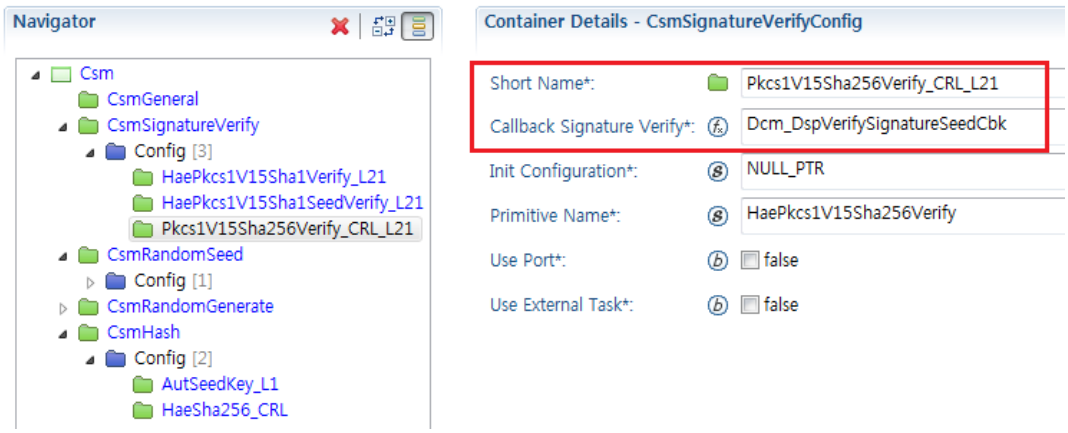
Security Access 2.0 은 기존의 C-SAC 에서 seed 요청 시 전송했던 인증서 600 byte 뒤에 CRL 501 byte(확장 가능) 가 붙어서 전송이 된다. 따라서 기존에 600 으로 설정되었던 ADR size 에 CRL size 를 더해서 설정해야 한다.



3. CSM 설정 추가

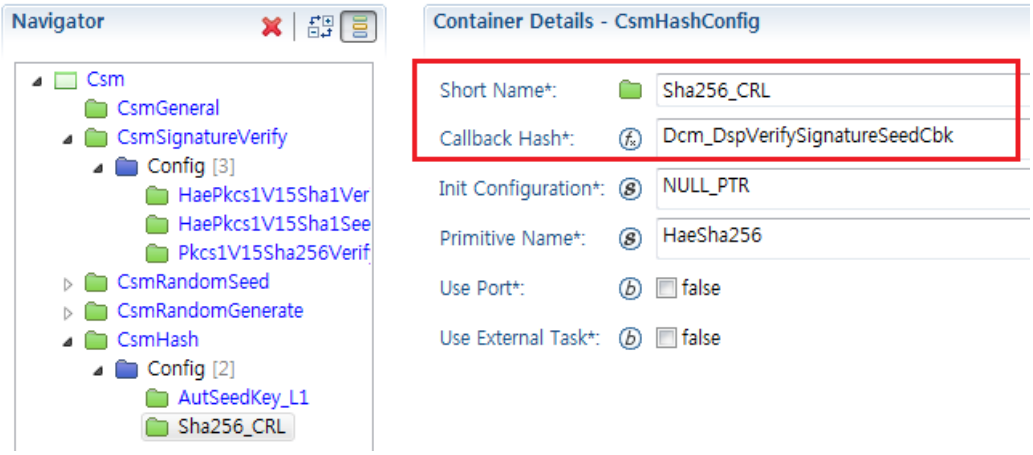
Security Access 2.0 에서는 기존의 인증서 서명 검증에 추가로 CRL 서명 검증과 CRL 발급자 공개키 식별자 검증을 위한 해쉬 연산을 필요로 한다. 따라서 CSM 에 CRL 서명 검증을 위한 CsmSignatureVerify 와 공개키 식별자 검증을 위한 CsmHash 설정을 추가해야 한다.

(1) CRL 서명 검증을 위한 알고리즘은 SAH256WithRSA 를 사용해야 하고, Short Name은 반드시 Pkcs1V15Sha256Verify_CRL_L21로 설정해야 한다. Callback function은 Dcm_DspVerifySignatureSeedCbk로 설정해야 한다



(2) 공개키 식별자 검증을 위한 해쉬 알고리즘은 SHA256를 사용해야 하고 Short Name은 Sha256_CRL로 설정해야

Dcm에서 인식 가능하다. Callback function은 Dcm_DspVerifySignatureSeedCbk로 설정해야 한다.

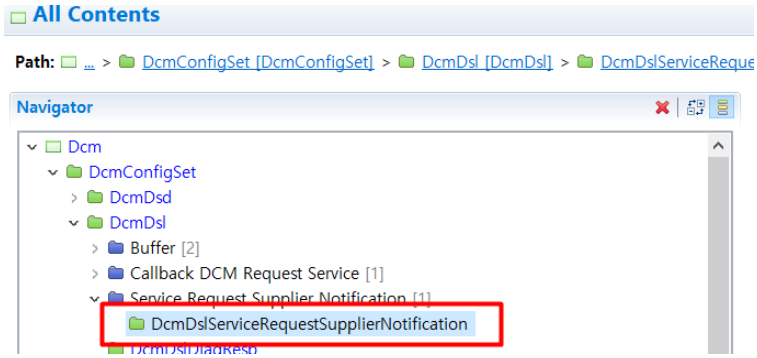


11.1.5 Engine Condition 에 따른 진단서비스 제약 조건 적용

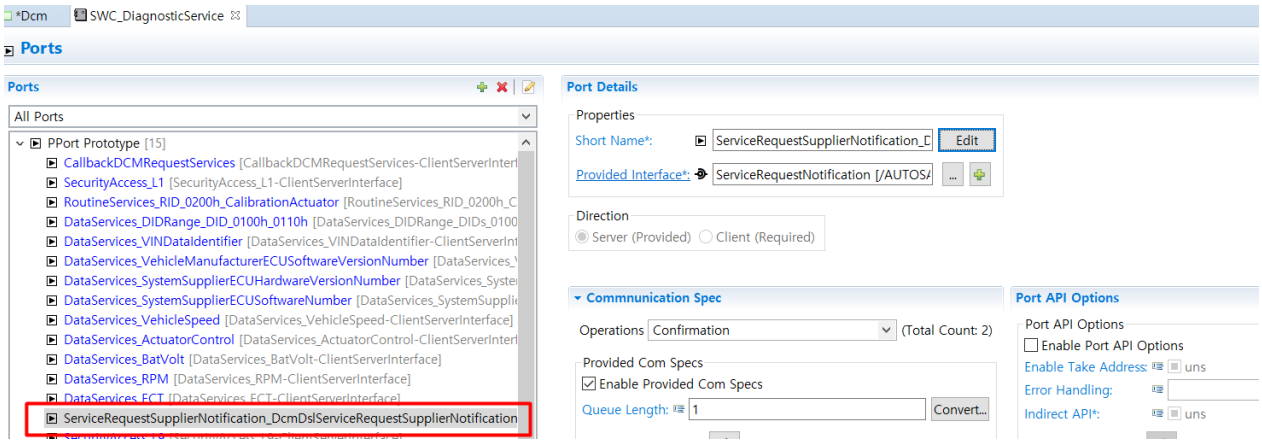
진단 사양에 따라 제어기 진단 서비스의 동작유무를 결정할 수 있다.

11.1.5.1 설정 DcmDslServiceRequestSupplierNotification

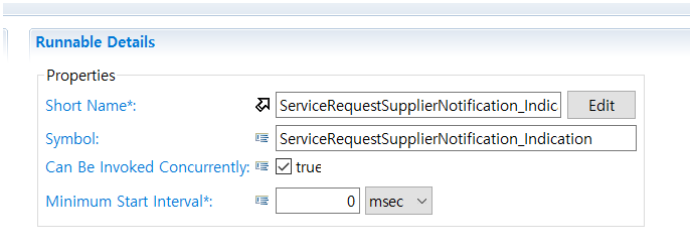
(1) DcmDsl/ DcmDslServiceRequestSupplierNotification 설정



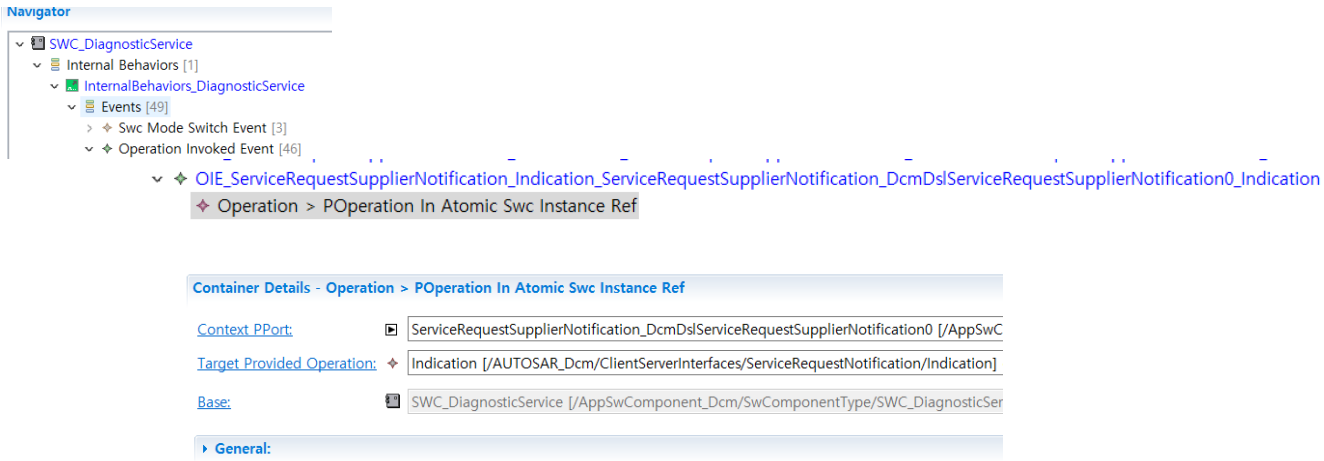
(2) P-Port 추가



(3) Runnable 추가



(4) Operation Invoked Event 추가



11.1.5.2 Xxx_Indication

Function Name	Xxx_Indication
Syntax:	Std_ReturnType Xxx_Indication (uint8 SID, uint8* RequestData, uint16 DataSize, uint8 ReqType, uint16 SourceAddress,

	Dcm_NegativeResponseCodeType* ErrorCode)
Refer	함수 prototype 은 #Xxx_Indication 참조

아래 코드는 이해를 돕기 예제이다. 제어기 환경에 따라 Callback 함수를 적용해야 한다.

XXX_Indciation

```
/*******************************************************************************
** Function Name        : Xxx_Indication
** Input Parameters     :
** - SID : Service ID
** - RequestData : Pointer to received data
** - DataSize : Data length of received data
** - ReqType : Rx message address type
**             1 : Functional Address
**             0: Physical Address
**
** - SourceAddress : Source address (Refer to configureation DcmDslProtocolRxTesterSourceAddr)
**
** Output Parameters    :
** - ErrorCode : If this operation returns value E_NOT_OK, the Dcm module
**   shall send a negative response with NRC code equal to the parameter
**
**   ErrorCode parameter value. (Refer to the Rte_Dcm_Type.h)
**
** Return parameter     :
** - Std_ReturnType
**   - RTE_E_OK : Request was successful
**   - RTE_E_Xxx_E_NOT_OK : Request was not successful
*******************************************************************************/
Std_ReturnType Xxx_Indication (uint8 SID, uint8* RequestData, uint16 DataSize, uint8 ReqType, uint16
SourceAddress, Dcm_NegativeResponseCodeType* ErrorCode )
{

  Std_ReturnType retVal = - RTE_E_OK;

  If (engine condition is met) /* Ex)  Engine Stop, IGN on */
  {
    /* 특정 조건에서 사양에 명시된 서비스가 실행될 수 없을 때 부정응답한다. */
    If (
        ( ##1 == SID)  ||
        ( ##1 == SID)  ||
        ( ##1 == SID)  ||
        (…            )
    )
    {
      *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
      retVal = RTE_E_Xxx_E_NOT_OK;
    }
  }
  return RetVal;
```

```
}
```

11.2 SecurityAccess Sample Code

Note: 아래 L1, L9 example 은 참조용이므로 프로젝트에 단순 적용 불가

Note: 함수명은 배포 프로젝트 기준이며 사용자가 임의로 변경 가능

Note: Csm API 사용 부분은 최신 Csm 모듈 참조 필요

11.2.1 Seed-Key Algorithm (L1)

Header File Include

```
/* Header File Inclusion for SecurityAccess */
#include "Rte_SWC_DiagnosticService.h"
```

Global Variables

```
/* Global Variables for SecurityAccess_L1 */
uint8 AppDcm_GaaSeed[4] = {0U, };
```

SecurityAccess (Seed-Key, L1) 요청 시 Subfunction 에 따라 다음 함수가 호출된다.

11.2.1.1 RequestSeed (27 01) : AppDcm_GetSeed_L1

- AppDcm_GetSeed_L1 은 플랫폼이 진단기로부터 Seed Response 요청을 받았을 때 호출하는 함수이다. Application 에서 해당 함수에 생성한 Seed 를 반환한다.

AppDcm_GetSeed_L1

```
FUNC(Std_ReturnType, RTE_CODE)AppDcm_GetSeed_L1(
  IN Dcm_OpStatusType OpStatus,
  OUT P2VAR(uint8, AUTOMATIC, RTE_APPL_DATA) Seed,
  OUT P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, RTE_APPL_DATA) ErrorCode)
{
  Std_ReturnType LddRetVal = RTE_E_OK;

  /* Generate Seed from random generator */
  if (RTE_E_OK != Rte_Call_AutRandomGenerate_L1_RandomGenerate(&AppDcm_GaaSeed[0], 4U) )
  {
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
    LddRetVal = RTE_E_SecurityAccess_L1_E_NOT_OK;
  }
  else
  {
    uint8 LucIndex;
    for (LucIndex = 0U; LucIndex < 4U; LucIndex++)
    {
      Seed[LucIndex] = AppDcm_GaaSeed[LucIndex];
    }
```

```
  }

  return LddRetVal;
}
```

11.2.1.2 SendKey (27 02 XX XX XX XX) : AppDcm_CompareKey_L1

- AppDcm_CompareKey_L1 은 플랫폼이 진단기로부터 Key 값과 함께 보안 레벨 접근을 요청받았을 때 호출하는 함수이다. Application 에서 해당 함수의 전달인자 Key 와 내부적으로 가지고 있는 Key 을 비교하여 최종적으로 보안 레벨 접근을 판단한다.

AppDcm_CompareKey_L1

```
FUNC(Std_ReturnType, RTE_CODE)AppDcm_CompareKey_L1(
  IN P2CONST(uint8, AUTOMATIC, RTE_APPL_DATA) Key,
  IN Dcm_OpStatusType OpStatus)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L1_E_NOT_OK;

  /* Generate Key based on SeedKey Algorithm */
  if (RTE_E_OK == Rte_Call_AutSeedKey_L1_HashStart() )
  {
    if (RTE_E_OK == Rte_Call_AutSeedKey_L1_HashUpdate(&AppDcm_GaaSeed[0], 4U);
    {
      uint8 LaaKey[4] = {0U, };
      uint32 LulLength = sizeof(LaaKey) / sizeof(LaaKey[0]);

      if (RTE_E_OK == Rte_Call_AutSeedKey_L1_HashFinish(LaaKey, &LulLength, FALSE);
      {
        uint8 LucIndex;
        for (LucIndex = 0U; LucIndex < LulLength; LucIndex++)
        {
          if (LaaKey[LucIndex] != Key[LucIndex])
          {
            break;
          }
        }
        if (LucIndex == LulLength)
        {
          /* key matches */
          LddRetVal = RTE_E_OK;
        }
        else
        {
          LddRetVal = RTE_E_SecurityAccess_L1_DCM_E_COMPARE_KEY_FAILED;
        }
      }
    }
```

```
  }
  return LddRetVal;
}
```

11.2.2 Advanced Seed-Key Algorithm (L9)

Header File Include
/* Header File Inclusion for SecurityAccess */ #include "Rte_SWC_DiagnosticService.h"

Global Variables
/* Global Variables for SecurityAccess_L9 */ uint8 AppDcm_GaaAdvSeed[8] = {0U, };

SecurityAccess (Advanced Seed-Key, L9) 요청 시 Subfunction 에 따라 다음 함수가 호출된다.

11.2.2.1 RequestSeed (27 11) : AppDcm_GetSeed_L9

- AppDcm_GetSeed_L9 은 플랫폼이 진단기로부터 Seed Response 요청을 받았을 때 호출하는 함수이다. Application 에서 해당 함수에 생성한 Seed 를 반환한다.

11.2.2.1.1 의사 난수(Pseudo Random) 사용시

진성난수가 아닌 의사 난수(Pseudo Random)를 사용하는 Advanced Seed-Key Algorithm 의 경우 RequestSeed 요청 전에 난수(Seed(1)) 생성을 위한 RandomSeed(2)가 업데이트 되어야 한다. 업데이트된 RandomSeed 를 기반으로 Seed 가 생성되며, 이 때의 Random 성은 Hae_CryptoLib 이 보장한다. 따라서 Application 설계자는 최초 RequestSeed 요청 전에 RandomSeed 를 최초 1 회 업데이트 해야하며, **RandomSeed 의 Random 성은 Application 에서 반드시 보장되어야 한다.** 아래 Sample Code 는 내부적으로 Flag 를 이용하여 AppDcm_GetSeed_L9 최초 호출 시 1 회만 RandomSeed 를 업데이트하는 예제이다.

(1) Seed : A seed value for generation 'key' in SecurityAccess requested

(2) RandomSeed : A seed value for generation 'Seed' in SecurityAccess requested

AppDcm_GetRandomSeed

```
/*******************************************************************************
** Function Name : AppDcm_GetRandomSeed
**
** Sync/Async :  Sync
** Input Parameters  :
** RandomSeed : A seed value for generation 'Seed' in SecurityAccess requested
**
** Return parameter      :
** - Std_ReturnType
**    - E_OK : Request was successful
**    - E_NOT_OK : Request was not successful
*******************************************************************************/
FUNC(Std_ReturnType, RTE_CODE) AppDcm_GetRandomSeed(
```

```
  P2VAR(uint8, AUTOMATIC,DCM_APPL_DATA) RandomSeed)
{
  Std_ReturnType RetVal = E_NOT_OK;

 /*
  * Apply user RandomSeed to the argument in this callout function.
  * RandomSeed is a 16-row array. (RandomSeed[16])
  */

 /*
  * Apply user RandomSeed to the argument in this function.
  * RandomSeed is a 16-row array. (RandomSeed[16])
  * Assign a random number to this variable (RandomSeed)
  * ex) current time, tick count, event timer, ADC noise, sensor value, etc..
  */

 /*
  * If you apply RandomSeed, you must return E_OK.
  * E_OK : Use the user RandomSeed
  * E_NOT_OK : Use the Autron RandomSeed
  */

  #ifdef INSTST_TESTCODE_INTEGRATED
  RetVal = E_OK;
  #endif

  return RetVal;
}
```

AppDcm_GetSeed_L9

```
FUNC(Std_ReturnType, RTE_CODE) AppDcm_GetSeed_L9(
  IN Dcm_OpStatusType OpStatus,
  OUT P2VAR(uint8, AUTOMATIC, RTE_APPL_DATA) Seed,
  OUT P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, RTE_APPL_DATA) ErrorCode)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
  volatile static boolean LblRandomSeedUpdated = FALSE;

  if (FALSE == LblRandomSeedUpdated)
  {
    uint8 LaaHaeHacSalt_L9[APPDCM_L9_HAE_PSEUDO_ENTROPY_LENGTH] = {0U};

    /* Get RandomSeed */
    LddRetVal = AppDcm_GetRandomSeed(LaaHaeHacSalt_L9);

    /* Update RandomSeed */
    if (RTE_E_OK == Rte_Call_HaePseudoRandomSeed_L9_RandomSeedStart())
    {
      if    (RTE_E_OK    ==    Rte_Call_HaePseudoRandomSeed_L9_RandomSeedUpdate(LaaHaeHacSalt_L9,
```

```
APPDCM_L9_HAE_PSEUDO_ENTROPY_LENGTH))
      {
        if (RTE_E_OK == Rte_Call_HaePseudoRandomSeed_L9_RandomSeedFinish())
        {
          LblRandomSeedUpdated = TRUE;
        }
      }
    }
  }

  if (TRUE == LblRandomSeedUpdated)
  {
    if  (RTE_E_OK  ==  Rte_Call_HaePseudoRandomGenerate_L9_RandomGenerate(&AppDcm_GaaAdvSeed[0],
8U))
    {
      uint8 LucIndex;
      for (LucIndex = 0U; LucIndex < 8U; LucIndex++)
      {
        Seed[LucIndex] = AppDcm_GaaAdvSeed[LucIndex];
      }
      LddRetVal = RTE_E_OK;
    }
  }
  if (RTE_E_OK != LddRetVal)
  {
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
  }

  return LddRetVal;
}
```

11.2.2.1.2 진성 난수(True Random) 사용시

Seed 생성 시 True Random 적용 할 경우 최초 1 회 True Random 으로 Seed 를 생성하고 이 후 Pseudo Random 으로 Seed 를 생성해야 한다.
이를 위해 10.2.2.1.2.1 과 10.2.2.1.2.2에 기술된 **AppDcm_GetSeed_L9** 와 같이 PseudoRandomGenerate 를 호출해야 한다.

Autoever HSM 2.x / Autron HSM 1.0 SPC58x 사용 시

AppDcm_GetSeed_L9

```
FUNC(Std_ReturnType, RTE_CODE) AppDcm_GetSeed_L9(
  IN Dcm_OpStatusType OpStatus,
  OUT P2VAR(uint8, AUTOMATIC, RTE_APPL_DATA) Seed,
  OUT P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, RTE_APPL_DATA) ErrorCode)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;

  #if defined(APPDCM_L9_AUTRON_HSM_RANDOM)
  /*****************************************************************************
   *                    true random generator(Chorus SPC58)                    *
   *****************************************************************************/
  if (RTE_E_OK == Rte_Call_AutHsmPseudoRandomGenerate_L9_RandomGenerate(&AppDcm_GaaAdvSeed[0],
8U))

  #elif defined(APPDCM_L9_HAE_HSM_RANDOM)
  /*****************************************************************************
   *                    true random generator(Autoever HSM)                    *
   *****************************************************************************/
  if (RTE_E_OK == Rte_Call_HaeHsmPseudoRandomGenerate_L9_RandomGenerate(&AppDcm_GaaAdvSeed[0],
8U))

  #endif
  {
    uint8 LucIndex;
    for (LucIndex = 0U; LucIndex < 8U; LucIndex++)
    {
      Seed[LucIndex] = AppDcm_GaaAdvSeed[LucIndex];
    }
    LddRetVal = RTE_E_OK;
  }
  else
  {
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
  }

  return LddRetVal;
}
```

◆ Autoever HSM 2.0 통해 True Random Generate 사용시 주의 사항

HSM포팅 시에 MCU의 특성에 따라 HSM to Host 인터럽트 활성화 API(ex)HSM_EnableService)를 반드시 호출해야 하는 경우가 있음. **따라서 HSM UM을 반드시 확인하여 구현할 것.**

예) RH850의 경우 mobilgene에서 Renesas OS를 사용중이며, 이 경우 HSM to Host 인터럽트 활성화 API(ex)HSM_EnableService)를 호출해야만 인터럽트가 동작함.

(오토에버 자체 OS를 사용하는 MCU의 경우 OS에서 설정시 OS자체에서 인터럽트 활성화함)

Autron HSM 1.0 RH850 F1KM / F1K ICUS 사용 시

Global Variables for RH850 F1K 2M

```
/* Global Variables for SecurityAccess_L9 */
uint8 AppDcm_GaaAdvSeed[8];
Std_ReturnType   AppDcm_SeedGenResult;
```

AppDcm_GetSeed_L9

```
FUNC(Std_ReturnType, RTE_CODE) AppDcm_GetSeed_L9(
  IN Dcm_OpStatusType OpStatus,
  OUT P2VAR(uint8, AUTOMATIC, RTE_APPL_DATA) Seed,
  OUT P2VAR(Dcm_NegativeResponseCodeType, AUTOMATIC, RTE_APPL_DATA) ErrorCode)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;

  switch(OpStatus)
  {
  case DCM_INITIAL:
    #if defined(APPDCM_L9_ICUS_RANDOM)
    /*********************************************************************
     *                  true random generator(RH850 ICUS)                *
     *********************************************************************/
    if (RTE_E_OK == Rte_Call_AutIcusRandomGenerate_L9_RandomGenerate(&AppDcm_GaaAdvSeed[0], 8U))

    #elif defined(APPDCM_L9_AUTRON_HSM_RANDOM_ICUM)
    /*********************************************************************
     *                  true random generator(RH850 ICUM)                *
     *********************************************************************/
    if                                          (RTE_E_OK                                          ==
Rte_Call_AutHsmPseudoRandomGenerate_L9_RandomGenerate(&AppDcm_GaaAdvSeed[0], 8U))

    #endif
    {
      AppDcm_SeedGenResult = RTE_E_SecurityAccess_L9_DCM_E_PENDING;
      LddRetVal = RTE_E_SecurityAccess_L9_DCM_E_PENDING;
    }
    break;

  case DCM_PENDING:
    LddRetVal = AppDcm_SeedGenResult;
    if (RTE_E_OK == AppDcm_SeedGenResult)
    {
      uint8 LucIndex;
      for (LucIndex = 0U; LucIndex < 8U; LucIndex++)
      {
        Seed[LucIndex] = AppDcm_GaaAdvSeed[LucIndex];
      }
    }
    break;
```

```
  case DCM_CANCEL:
    LddRetVal = RTE_E_OK;
    break;
  default :
    break;
  }

  if (RTE_E_SecurityAccess_L9_E_NOT_OK == LddRetVal)
  {
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
  }
  return LddRetVal;
}
```

AppDcm_GetSeedCbk_L9

```
FUNC(Std_ReturnType, SWC_DiagnosticService_CODE) AppDcm_GetSeedCbk_L9(
  IN VAR(Std_ReturnType, AUTOMATIC) retVal)
{
  if (retVal == RTE_E_OK)
  {
    AppDcm_SeedGenResult = RTE_E_OK;
  }
  else
  {
    AppDcm_SeedGenResult = RTE_E_SecurityAccess_L9_E_NOT_OK;
  }

  return RTE_E_OK;
}
```

11.2.2.2 SendKey (27 12 XX XX XX XX XX XX XX XX) : AppDcm_CompareKey_L9

- AppDcm_CompareKey_L9 은 플랫폼이 진단기로부터 Key 값과 함께 보안 레벨 접근을 요청받았을 때 호출하는 함수이다. Application 에서 해당 함수의 전달인자 Key 와 내부적으로 가지고 있는 Key 을 비교하여 최종적으로 보안 레벨 접근을 판단한다.

AppDcm_CompareKey_L9

```
FUNC(Std_ReturnType, RTE_CODE) AppDcm_CompareKey_L9 (
  IN P2CONST(uint8, AUTOMATIC, RTE_APPL_DATA) Key,
  IN Dcm_OpStatusType OpStatus)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
  /*************************************************************************
   *            generate the   key   based on the advanced seedKey algorithm                *
   *************************************************************************/
  if (RTE_E_OK == Rte_Call_HaeAdvSeedKey_L9_HashStart() )
```

```
  {
    if (RTE_E_OK == Rte_Call_HaeAdvSeedKey_L9_HashUpdate(&AppDcm_GaaAdvSeed[0], 8U) )
    {
      uint8 LaaKey[8] = {0U, };
      uint32 LulLength = sizeof(LaaKey) / sizeof(LaaKey[0]);
      if (RTE_E_OK == Rte_Call_HaeAdvSeedKey_L9_HashFinish(LaaKey, &LulLength, FALSE))
      {
        uint8 LucIndex;
        for (LucIndex = 0U; LucIndex < LulLength; LucIndex++)
        {
          if (LaaKey[LucIndex] != Key[LucIndex])
          {
            break;
          }
        }
        if (LucIndex == LulLength)
        {
          LddRetVal = RTE_E_OK; /* key matches */
        }
        else
        {
          LddRetVal = RTE_E_SecurityAccess_L9_DCM_E_COMPARE_KEY_FAILED;
        }
      }
    }
  }
  return LddRetVal;
}
```

11.2.3 Xxx_GetSecurityAttemptCounter

DcmDspSecurityAttemptCounterEnabled == true 인 경우,
Dcm 은 ECU startup 단계에서 모든 Security Level 의 Xxx_GetSecurityAttemptCounter 의 수행 결과를 통해 Security Attempt Counter 초기값을 결정한다.

Xxx_GetSecurityAttemptCounter 는 특정 Security Level 의 Security Attempt Counter 를 application 에서 읽어온다. Application 에서는 특정 Security Level 의 Security Attempt Counter 를 non-volatile memory 로부터 읽고 Xxx_GetSecurityAttemptCounter 의 return value 와 AttemptCounter 를 적절히 반환해야 한다.

만약 해당함수의 결과가 E_NOT_OK 이거나, DcmDspSecurityMaxAttemptCounterReadoutTime 만료에 의해 operation 이 cancel 되는 경우, Dcm 은 해당 Security Level 의 Security Attempt Counter 를 DcmDspSecurityNumAttDelay 로 결정하며 Security Delay Timer 를 시작시킨다.

Note : nov-volatile memory 의 상태가 virgin state 인 경우, Application 은 Xxx_GetSecurityAttemptCounter 의 return value 와 AttemptCounter 를 적절히 반환해야 한다.

아래는 NvM 에 Security Attempt Counter 를 저장하는 경우의 예시이다.

AppDcm_GetSecurityAttemptCounter_L9

```
/* Global variable for security attempt counter of security level 9 */
uint8 AppDcm_SecurityAttemptCounter_L9 = 0x00;

FUNC(Std_ReturnType, SWC_DiagnosticService_CODE) AppDcm_GetSecurityAttemptCounter_L9(
  IN VAR(Dcm_OpStatusType, AUTOMATIC) OpStatus,
  OUT P2VAR(uint8, AUTOMATIC, RTE_APPL_DATA) AttemptCounter)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
  Std_ReturnType LddNvMRetVal = E_NOT_OK;
  NvM_RequestResultType LddNvMRequestResult = NVM_REQ_NOT_OK;

  /*
    Dcm must receive the result of NvM_ReadBlock() job from the application
    to initialize the attempt counter of each security level.
    Therefore, NvM_GetErrorStatus() must be called sequentially
    after NvM_ReadBlock() returns E_OK.
  */
  switch (OpStatus)
  {
    case DCM_INITIAL:
      /* NOTE :
        Since the argument AttemptCounter is a local variable pointer passed from Dcm,
        it must not be passed as an argument to NvM_ReadBlock().
        Pass the NvMRamBlockDataAddress of this NvM Block as an argument to NvM_ReadBlock(). */
      if (E_OK == Rte_Call_SWC_DiagnosticService_NvMService_DcmSecurityAttemptCounter_L9_ReadBlock(
          (void *)AppDcm_SecurityAttemptCounter_L9))
      {
        LddRetVal = RTE_E_SecurityAccess_L9_DCM_E_PENDING;
      }
      else
      {
        LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
      }
      break;

    case DCM_PENDING:
      LddNvMRetVal = Rte_Call_SWC_DiagnosticService_NvMService_DcmSecurityAttemptCounter_L9_GetErrorStatus(
        &LddNvMRequestResult);
      if (E_OK == LddNvMRetVal)
      {
        if (NVM_REQ_OK == LddNvMRequestResult)
        {
          /* Get the attempt counter of security level 9 */
          *AttemptCounter = AppDcm_SecurityAttemptCounter_L9;
```

```
            LddRetVal = RTE_E_OK;
          }
          else if (NVM_REQ_PENDING == LddNvMRequestResult)
          {
            LddRetVal = RTE_E_SecurityAccess_L9_DCM_E_PENDING;
          }
          else if (/* NvM block is in virgin state */)
          {
            /* If the NvM block is in virgin state,
               Application must determine AttemptCounter and return value appropriately. */
          }
          else
          {
            LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
          }
        }
        else
        {
          LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
        }
        break;

      case DCM_CANCEL:
        break ;

      default:
        break ;
    }

    return LddRetVal;
}
```

11.2.4 Xxx_SetSecurityAttemptCounter

DcmDspSecurityAttemptCounterEnabled == true 인 경우,
Dcm 은 특정 Security Level 의 Security Attempt Counter 가 변경되는 경우, Xxx_SetSecurityAttemptCounter 를 통해 변경된 값을 application 에 전달한다.

Xxx_SetSecurityAttemptCounter 은 특정 Security Level 의 Security Attempt Counter 를 application 에게 전달한다. Application 에서는 전달된 Security Attempt Counter 를 non-volatile memory 에 저장하고 return value 를 적절히 반환해야 한다.

아래는 NvM 에 Security Attempt Counter 를 저장하는 경우의 예시이다.

AppDcm_SetSecurityAttemptCounter_L9

```
/* Global variable for security attempt counter of security level 9 */
uint8 AppDcm_SecurityAttemptCounter_L9 = 0x00;

FUNC(Std_ReturnType, SWC_DiagnosticService_CODE) AppDcm_SetSecurityAttemptCounter_L9(
  IN VAR(Dcm_OpStatusType, AUTOMATIC) OpStatus,
  IN VAR(uint8, AUTOMATIC) AttemptCounter)
{
  Std_ReturnType LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
  Std_ReturnType LddNvMRetVal = E_NOT_OK;
  NvM_RequestResultType LddNvMRequestResult = NVM_REQ_NOT_OK;

  /*
    Dcm must receive the result of NvM_WriteBlock() job from the application
    to store the attempt counter of current security level
    (1) to respond to a SecurityAccess request or (2) after the delay timer expires.
    Therefore, NvM_GetErrorStatus() must be called sequentially
    after NvM_WriteBlock() returns E_OK.
  */
  switch (OpStatus)
  {
    case DCM_INITIAL:
      /* Set the attempt counter of security level 9 */
      AppDcm_SecurityAttemptCounter_L9 = AttemptCounter;

      if (E_OK == Rte_Call_SWC_DiagnosticService_NvMService_DcmSecurityAttemptCounter_L9_WriteBlock(
          (const void *)&AppDcm_SecurityAttemptCounter_L9))
      {
        LddRetVal = RTE_E_SecurityAccess_L9_DCM_E_PENDING;
      }
      else
      {
        LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
      }
      break;

    case DCM_PENDING:
      LddNvMRetVal = Rte_Call_SWC_DiagnosticService_NvMService_DcmSecurityAttemptCounter_L9_GetErrorStatus(
        &LddNvMRequestResult);
      if (E_OK == LddNvMRetVal)
      {
        if (NVM_REQ_OK == LddNvMRequestResult)
        {
```

```
            LddRetVal = RTE_E_OK;
          }
          else if (NVM_REQ_PENDING == LddNvMRequestResult)
          {
            LddRetVal = RTE_E_SecurityAccess_L9_DCM_E_PENDING;
          }
          else
          {
            LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
          }
        }
        else
        {
          LddRetVal = RTE_E_SecurityAccess_L9_E_NOT_OK;
        }
        break;

      case DCM_CANCEL:
        break;

      default:
        break;
    }

    return LddRetVal;
}
```

11.3 Application 영역에서의 'critical normal mode' 관련 NRC22 처리

아래 그림은 ES95486-00E_V1.9.0 기준 CommunicationControl 서비스의 부정응답 사양의 일부이다.

22	conditionNotCorrect	M	Use when the server is in a critical normal mode activity and therefore cannot disable/enable the requested communication type.

또한 아래 그림은 AUTOSAR Diagnostic Communication Manager 4.2.2 사양서 chapter 7.4.2.8 Service 0x28 - CommunicationControl 의 일부이다.

Note : Condition checks (i.e. NRC 22 checks) on CommunicationType and NetworkType as well as check of CommunicationType support (i.e. NRC 0x31 check for CommunicationType) are not directly supported by the Dcm.
Supplier/manufacturer notifications can be used.

SID28 CommunicationControl 과 마찬가지로 SID29 EnableNormalMessageTransmission (ES95486-00E V1.9.0 이후 사양에서 업데이트 예정), SID85 ControlDTCSetting 에도 부정응답 사양에 대해서 critical normal mode 가 적용되어 있으며, 이는 플랫폼 내부에서 판단할 수 없는 서비스 처리 불가 상태를 의미한다.

따라서 ServiceRequestSupplierNotification_Indication() callback 서비스를 이용하여 Service Request 단계에서 해당 조건을 판별하여 어플리케이션에서 이를 처리하여야 한다. 아래를 참고한다.

Note: 아래 Pseudo Code 는 참조용이므로 프로젝트에 단순 적용 불가

```
FUNC(Std_ReturnType,RTE_CODE)ServiceRequestSupplierNotification_Indication( ... )
{
  /* This is pseudo code... */

  /* SID28, SID29, SID85 를 처리할 수 없는 상태 (Critical normal mode)일 경우
     DCM_E_CONDITIONSNOTCORRECT 부정응답 처리한다 */
  if(Service is 0x28 && critical normal mode1 )
  {
    LddRetVal = E_NOT_OK;
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
  {
  else if(Service is 0x29 && critical normal mode2 )
  {
    LddRetVal = E_NOT_OK;
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
  }
  else if(Service is 0x85 && critical normal mode3 )
  {
    LddRetVal = E_NOT_OK;
    *ErrorCode = DCM_E_CONDITIONSNOTCORRECT;
  }

  return LddRetVal;
}
```

11.4 StopDiagnosticSession 서비스의 NRC10 (General Reject) 구현

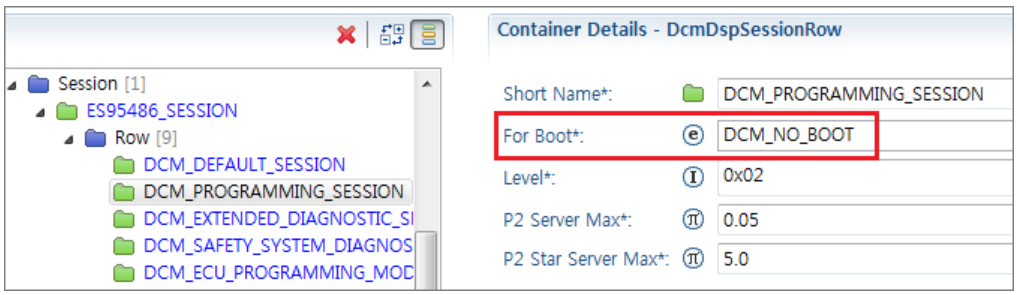
사양근거 :

StopDiagnosticSession 서비스의 부정응답 사양에 General Reject 의 발생조건을 다음과 같이 기술하고 있다.

GeneralReject (Programming session is running – Reprogramming routine is not completed yet.)

전제조건 :

1) StopDiagnositcSession 사용시
2) 오토에버 Fbl 을 사용하지 않을 경우
3) ProgrammingSession 의 DcmDspSessionForBoot 가 DCM_NO_BOOT 일 경우



StopDiagnosticService 를 사용하면서 2), 3) 조건을 만족하면 ProgrammingSession 일 때 "Reprogramming routine is not complete yet"…① 조건을 Application 영역에서 판단해야 한다.

ServiceRequestNotificationIndication Callback 기능을 이용하여 ① 조건이 충족되면 NRC10 (General Reject)를 내보내도록 한다 (아래 Sample Code 참고).

Note: 아래 코드는 Sample Code 이므로 참고용으로 사용한다.

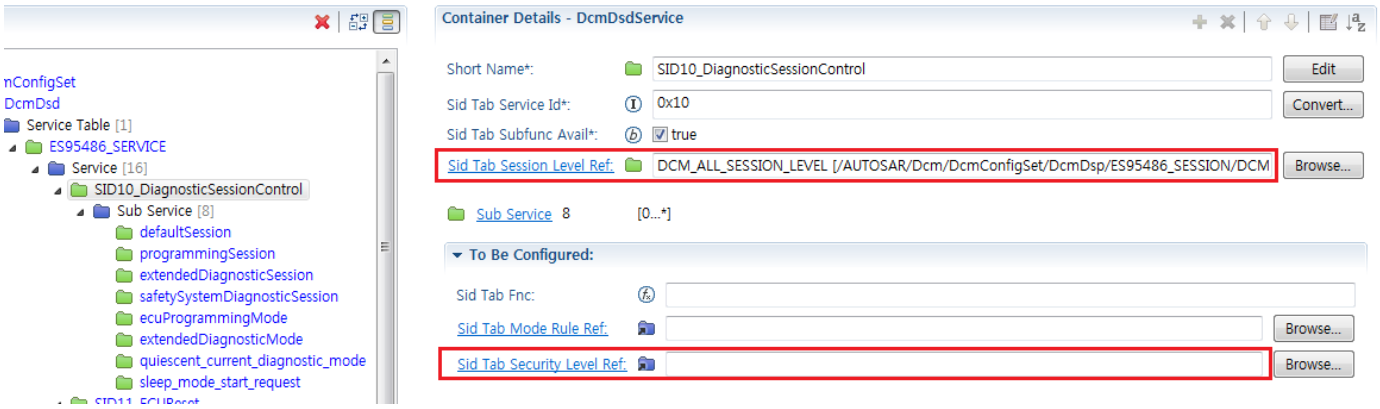
```
FUNC(Std_ReturnType,RTE_CODE) ServiceRequestSupplierNotification_Indication( ... )
{
  VAR(Std_ReturnType, RTE_DATA) LddRetVal;
  ...
  if(When StopDiagnosticSession service is requested)
  {
    if (Reprogramming routine starts || Reprogramming routine is not complete yet)
    {
      *ErrorCode = DCM_E_GENERALREJECT;
      LddRetVal = E_NOT_OK;
    }
    else
    {
```

```
        LddRetVal = E_OK;
      }
    }
    ...
    return LddRetVal;
}
```

11.5 Service, SubService 의 Session Level, Security Level Reference 설정

Note : Dcm 1.4.0 이상에서 검토 필요

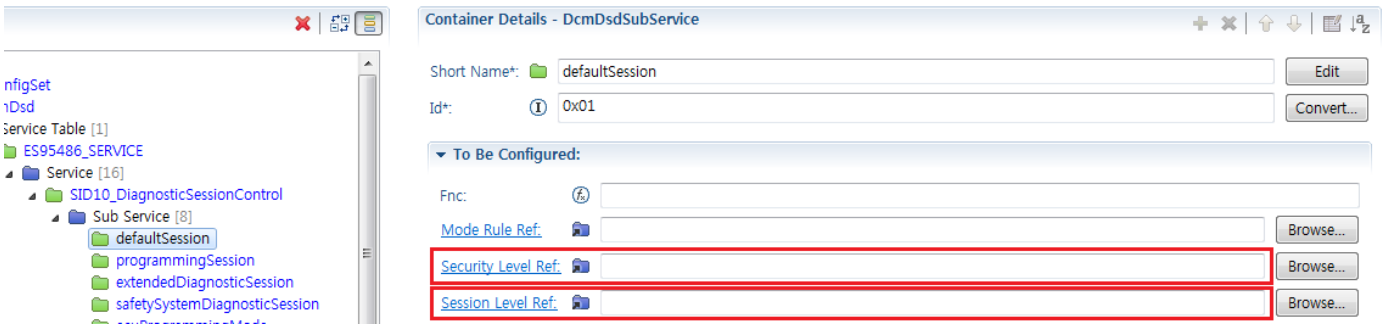
DcmDsdService, SubService Container 에는 아래 그림과 같이 Session Level 과 Security Level 을 Reference 할 수 있는 설정이 있으며, Dcm 1.4.0 에서 다음 설정이 Changeable Parameter 로 변경되었다.



[그림 10.6-1 : DcmDsdService Container]

- DcmDsdSidTabSessionLevelRef : Service 가 해당 설정으로 Reference 된 Session Level 에서만 동작한다. 선택 가능한 Session Level 은 DcmDspSessionRow 하위 목록들이다. Reference 되지 않은 Session Level 에서 Service 요청 시 NRC7F (serviceNotSupportedInActiveSession)가 발생한다.

- DcmDsdSidTabSecurityLevelRef : Service 가 해당 설정으로 Reference 된 Security Level 에서만 동작한다. 선택 가능한 Security Level 은 DcmDspSecurityRow 하위 목록들이다. Reference 되지 않은 Security Level 에서 Service 요청 시 NRC33 (securityAccessDenied)이 발생한다.



[그림 10.6-2 : DcmDsdSubService Containter]

- DcmDsdSubServiceSessionLevelRef : SubService 가 해당 설정으로 Reference 된 Session Level 에서만 동작한다. 선택 가능한 Session Level 은 DcmDspSessionRow 하위 목록들이다. Reference 되지 않은 Session Level 에서 SubService 요청 시 NRC7E (subFunctionNotSupportedInActiveSession)가 발생한다.

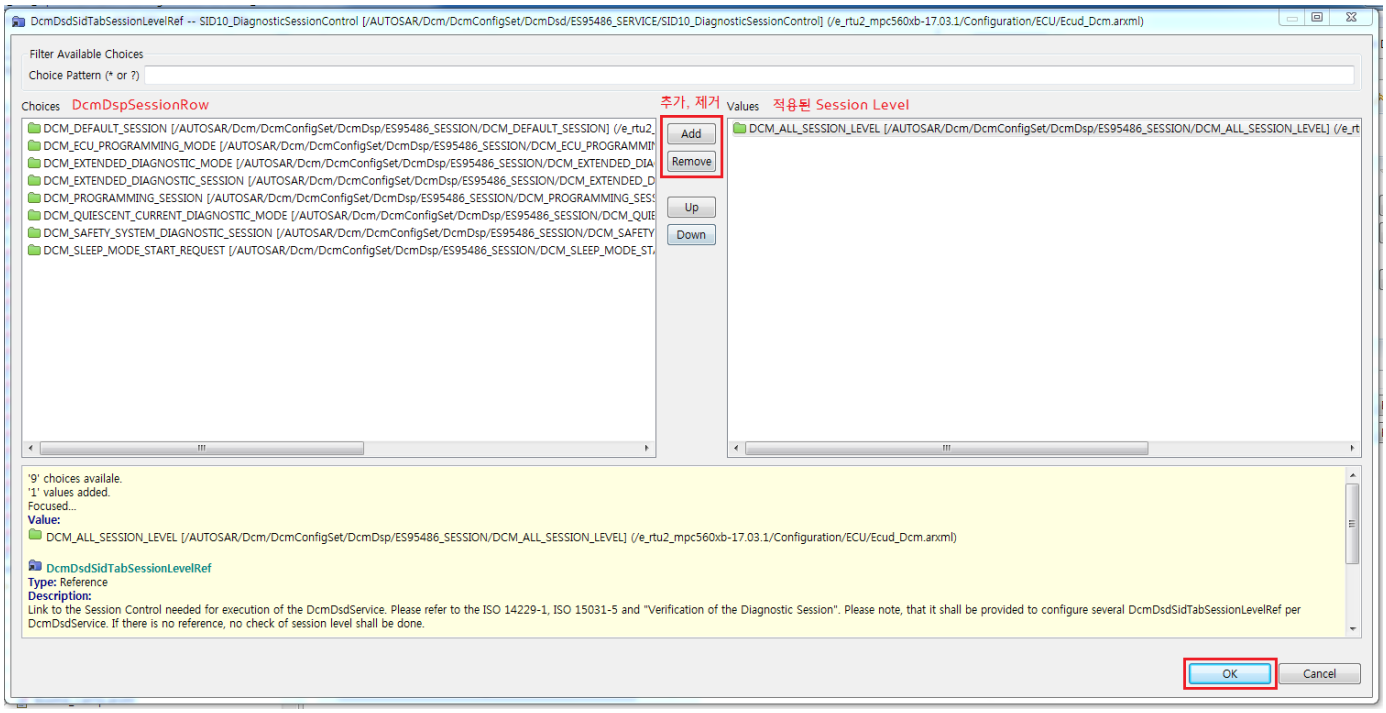
- DcmDsdSubServiceSecurityLevelRef : SubService 가 해당 설정으로 Reference 된 Security Level 에서만 동작한다. 선택 가능한 Security Level 은 DcmDspSecurityRow 하위 목록들이다. Reference 되지 않은 Security Level 에서 SubService 요청 시 NRC33 (securityAccessDenied)이 발생한다.

오토에버 플랫폼은 사용자가 SRS 에 입력한 Service 와 SubService 에 대해서 ES95486-00 사양의 [Diagnostic Service List] 를 기준으로 Session Level 과 Security Level 을 기본 설정하여 배포한다.

사용자가 제어기 사양 등에 따라 위 설정을 변경하고 싶다면 아래와 같은 방법으로 설정할 수 있다.

Session Level 변경 방법

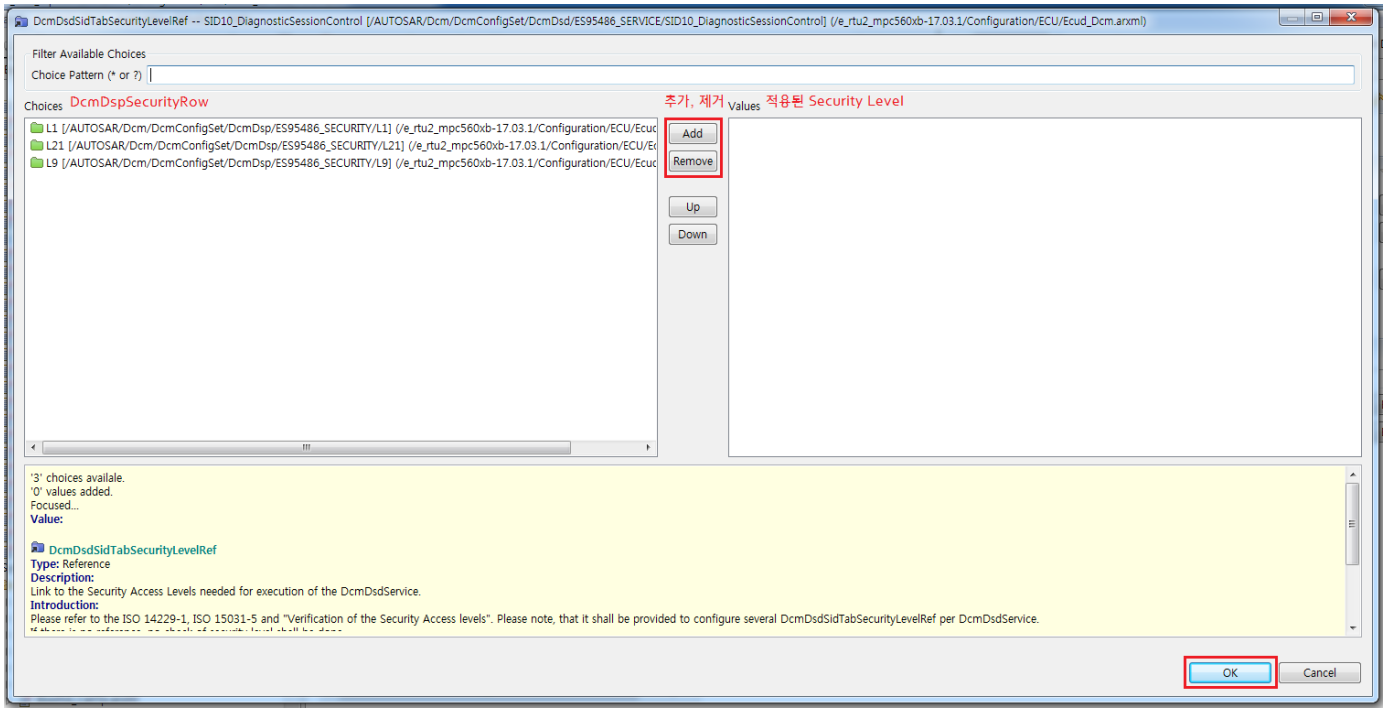
1) Session Level 변경을 원하는 Service (혹은 SubService) Container 의 Sid Tab Session Level Ref. (혹은 Session Level Ref.) 의 [Browse...] 버튼을 클릭한다.



2) 위 그림처럼 창이 뜨면 [Add], [Remove] 버튼을 통해 Service (혹은 SubService)에 Reference 할 Session Level 을 선택한 후 [OK]를 눌러 적용한다. 우측 Values 에 있는 목록이 Reference 된 Session Level 이다.

Security Level 변경 방법

1) Security Level 변경을 원하는 Service (혹은 SubService) Container 의 Sid Tab Security Level Ref. (혹은 Security Level Ref.) 의 [Browse...] 버튼을 클릭한다.



2) 위 그림처럼 창이 뜨면 [Add], [Remove] 버튼을 통해 Service (혹은 SubService)에 Reference 할 Security Level 을 선택한 후 [OK]를 눌러 적용한다. 우측 Values 에 있는 목록이 Reference 된 Security Level 이다.

11.6OBD service

Path: DcmConfigSet [DcmConfigSet] > DcmDsd [DcmDsd] > ES95486_SERVICES [DcmDsdServiceTable]

Navigator

- DcmDsd
  - Service Request Manufacturer Notification [1]
  - Service Request Supplier Notification [1]
  - Service Table [1]
    - ES95486_SERVICES
      - Service [34]

Container Details - DcmDsdService

Index	Short Name	Role	Used	Sid Tab Fnc	Sid Tab Servic...	Sid Tab Subfu...	Sid
14	SID34_RequestDownload		true		0x34	false	
15	SID35_RequestUpload		true		0x35	false	
16	SID36_TransferData		true		0x36	false	
17	SID37_RequestTransferExit		true		0x37	false	
18	SID38_RequestFileTransfer		false		0x38	false	
19	SID3D_WriteMemoryByAddress		true		0x3D	false	
20	SID3E_TesterPresent		true		0x3E	true	
21	SID85_ControlDTCSetting		true		0x85	true	
22	SID86_ResponseOnEvent		false		0x86	true	
23	SID87_LinkControl		false		0x87	true	
24	SID01_ReqCurrentPowerTrain		true		0x01	false	
25	SID02_ReqFreezeFrameData		true		0x02	false	
26	SID03_ObtainDTC		true		0x03	false	
27	SID04_ClearDTC		true		0x04	false	
28	SID06_ReqOnboardMonitorR...		true		0x06	false	
29	SID07_ObtainDTC		true		0x07	false	
30	SID08_ReqControlOnBoardSy...		true		0x08	false	
31	SID09_ReqVehicleInfo		true		0x09	false	
32	SID0A_ObtainDTC		true		0x0A	false	
33	SID10_DiagnosticSessionCon...		true		0x10	true	

OBD 서비스 추가 시 기존의 DcmDsdServiceTable 에 추가해야 한다.