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AUTOSAR Nm User Manual		

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1. Overview

It is written based on Autosar standard SRS / SWS, and if more detailed functional description is needed when using the module, refer to the reference document below.

The interpretation of the category related to setting is as follows.

- Changeable (C) : Item that can be set by the user
- Fixed (F) : Item that cannot be changed by the user
- Not Supported (N) : Deprecated item

2. Reference

Sl. No.	Title	Version
1	AUTOSAR_SWS_NetworkManagementInterface.pdf	4.4.0
2	AUTOSAR_EXP_LayeredSoftwareArchitecture.pdf	4.4.0

3. AUTOSAR System

3.1 CAN Communication Stack

In the Hyundai AUTOEVER AUTOSAR platform, the CAN Communication Stack consists of the detailed module below

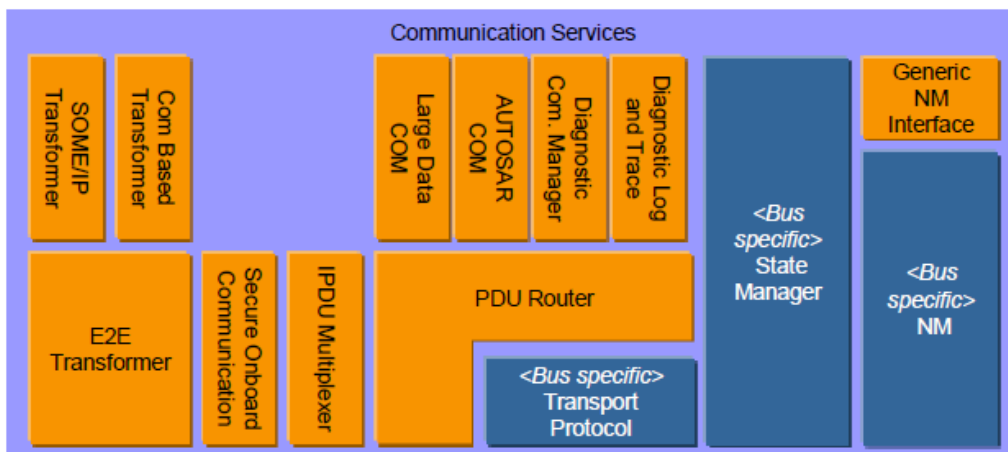
- CanIf : Sending and receiving CAN messages
- PduR : In charge of PDU transmission between communication modules
- IpduM : Responsible for sending and receiving multiplexed PDUs
- CanTp : Responsible for large scale data transmission and reception based on transport protocol
- CanSM : In charge of CAN communication channel status control and bus-off processing
- CanTrcv : CAN transceiver hardware control
- OsekNm/Nm : Responsible for synchronization of CAN communication channel is SLEEP entry
- CanCM : Responsible for activating and deactivating CAN communication based on battery voltage and HKMC specifications

3.2 Nm Module

The Nm module is an adaptation layer between ComM and <BusNm>.

The Nm module performs the following operations to control the sleep and wake-up of the communication channel.

- Notify ComM of the status transition of the child <BusNm> module.
- Notify the lower <BusNm> module of the ComM module is communication mode change request.



4. Product Release Notes

4.1 Overview

The purpose of this chapter is to provide release-related contents for the Hyundai AutoEver Nm module and description restrictions and specifics for the Nm Software product release version.

4.2 Scope of the Release

All contents of this document are limited to the following Hyundai AutoEver Nm modules.

Module name	AUTOSAR version	Module version
Nm	4.4.0	1.0.5

※ Module version means the SW version of each module is BswModule Description (Bswmd) file.

4.3 Change Log

4.3.1 Version 1.0.5.0

➤ Improvement

- Improve generator for RTE_TCG_WARN_CMD_004/005

Cause	To prevent TCG Warning
Operation impact	None
Setting effect	None
ASW Action Needs	None

➤ Improvement

- Enhances DataRace in Polyspace

Cause	Improved Datarace in Polyspace detections
Operation impact	None
Setting effect	None
ASW Action Needs	None

➤ Improvement

- Support Exclusive Areas, regardless of NmCoordinator

Cause	Exclusive Areas are applied or not according to Nm Coordinator option
Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.2 Version 1.0.4.1

➤ Improvement

- Update WP according to Final Inspection of A-SPICE

Cause	Work Products should be updated following the final Inspection of A-SPICE.
Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.3 Version 1.0.4.0

➤ Improvement

- Update WP according to Final Inspection of A-SPICE

Cause	Work Products should be updated following the final Inspection of A-SPICE.
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Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.4 Version 1.0.3.0

➤ Bug

- When Post Build is enabled, "unresolved symbol" compilation error occurs in EcuM

Cause	Include Nm_Pbcfg.h in Nm.h to fix "unresolved symbol" compilation error in EcuM when Post Build is enabled
Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.5 Version 1.0.2.0

➤ Task

- Update TCODE for Post-Build feature

Cause	Update generation tool to generate correct pattern used by EcuM/BswM to initialize Nm module with different post-build variants
Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.6 Version 1.0.1.1

➤ Task

Cause	Editorial Changes of Work Products (Add Copyright comment in the code, DeliveryBoxHistory document template updates, ...)
Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.7 Version 1.0.1.0

➤ Change request

Cause	Aspice compliance Update
Operation impact	None
Setting effect	None
ASW Action Needs	None

➤ Change request

Cause	Migrate NM from R44 to R40
Operation impact	None

Setting effect	None
ASW Action Needs	None

➤ Change request

Cause	Change logo and company name
Operation impact	None
Setting effect	None
ASW Action Needs	None

➤ Change request

Cause	Fix new ASPICE findings Oct-2021
Operation impact	None
Setting effect	None
ASW Action Needs	None

➤ Change request

Cause	R44 Modules Header Comments Change Request
Operation impact	None
Setting effect	None
ASW Action Needs	None

4.3.8 Version 1.0.0.0

Cause	Initial Version
Operation impact	-
Setting effect	-
ASW Action Needs	-

4.4 Module Release Notes**4.4.1 Limitations**● **Coordination Support**

Ability to synchronize SLEEP entry of different networks belonging to one cluster. Since the CanNm module must be applied to all networks in the cluster, the platform does not currently support this function.

● **Passive Mode Support**

The network node configured in Passive mode does not transmit NM messages and operates according to the SLEEP and Wake-up state of the entire network. Currently, the platform does not support the function.

● **State Report Signal**

By designating the transmission signal, the current NM status information can be transmitted to the outside.

Currently, the platform does not support the function.

● Car Wake Up Support

It is a Wake-up function using CWU bit value on Nm message and needs to be interlocked with CanNm module, so the current platform does not support this function.

4.4.2 Deviations

None

5. Configuration Guide

The Nm module setting of the AUTOSAR platform distributed by Hyundai Autoever is a setting reflecting Hyundai Autoever Policy's policy. Therefore, you should consult with Hyundai Autoever.

The following chapters summarize all configuration parameters of Nm module

5.1 NmGlobalFeatures

Parameter Name	Value	Category
NmBusSynchronizationEnabled	-	Changeable
NmCarWakeUpCallout	-	Changeable
¹⁾ NmCarWakeUpRxEnabled	False	Changeable
²⁾ NmComControlEnabled	-	Changeable
NmCoordinatorSupportEnabled	False	Changeable
³⁾ NmPduRxIndicationEnabled	-	Changeable
⁴⁾ NmStateChangeIndEnabled	-	Changeable
⁵⁾ NmUserDataEnabled	-	Changeable
NmCoordinatorSyncSupport	-	Changeable
NmGlobalCoordinatorTime	-	Changeable
⁶⁾ NmRemoteSleepIndEnabled	-	Changeable
⁷⁾ NmHeaderFileInclusion	-	Changeable

- 1) NmCarWakeUpRxEnabled:
Provides functions for processing Car Wake-up Indication. (Nm_CarWakeUpIndication)
- 2) NmComControlEnabled :
Provides functions for NM PDU transmission/reception control. (Nm_EnableCommunication, Nm_DisableCommunication)
- 3) NmPduRxIndicationEnabled :
Provides functions for processing Pdu Rx Indication. (Nm_PduRxIndication)
- 4) NmStateChangeIndEnabled:
Provides function for processing State Change Indication. (Nm_StateChangeIndication)
- 5) NmUserDataEnabled :
Provides function for processing User Data of Nm Pdu. (Nm_SetUserData, Nm_GetUserData)
- 6) NmRemoteSleepIndEnabled :
Provides function for processing Remote Sleep Indication. (Nm_RemoteSleepIndication, Nm_RemoteSleepCancellation, Nm_CheckRemoteSleepIndication)
- 7) NmHeaderFileInclusion:
Provides the function to include User Defined Header File.

5.2 NmGlobalConstants

Parameter Name	Value	Category
¹⁾ NmNumberOfChannels	Automated	Fixed

- 1) NmNumberOfChannels :
Specifies the number of NmChannels.

5.3 NmGlobalProperties

Parameter Name	Value	Category
¹⁾ NmCycleMainFunction	-	Changeable
²⁾ NmDevErrorDetect	True	Changeable
³⁾ NmVersionInfoApi	True	Changeable

- 1) NmCycleMainFunction :
Specifies the cycle of Nm_MainFunction.
- 2) NmDevErrorDetect :
It provides a function to detect development errors.
- 3) NmVersionInfoApi :
Provides a function for providing VersionInfo. (Nm_GetVersionInfo)

5.4 NmChannelConfig

Parameter Name	Value	Category
NmActiveCoordinator	-	Changeable
NmChannelSleepMaster	False	Changeable
NmComUserDataSupport	-	Changeable
NmCoordClusterIndex	-	Changeable
NmPassiveModeEnabled	False	Changeable
NmStateReportEnabled	False	Changeable
NmSynchronizingNetwork	False	Changeable
¹⁾ NmComMChannelRef	Automated	Fixed
²⁾ NmStateReportSignalRef	-	Changeable
³⁾ NmStateChangeIndUserCallout	-	Changeable
⁴⁾ NmPduRxIndUserCallout	-	Changeable
⁵⁾ NmRepeatMsgIndUserCallout	-	Changeable
⁶⁾ NmTxTimeoutExceptionUserCallout	-	Changeable
NmBusType	Automated	Fixed

- 1) NmComMChannelRef :
Reference to the corresponding ComM Channel. (Nm Channel_Id)
- 2) NmStateReportSignalRef :
Reference to the signal for setting NMS by calling Com_SendSignal for the respective channel.
- 3) NmStateChangeIndUserCallout :
User Callout function to be called in Nm_StateChangeNotification. Generic BusNmType such as OsekNm is not support.
- 4) NmPduRxIndUserCallout :
User Callout function to be called in Nm_PduRxIndication.
- 5) NmRepeatMsgIndUserCallout :
User Callout function to be called in Nm_RepeatMessageIndication.
- 6) NmTxTimeoutExceptionUserCallout:
User Callout function to be called in Nm_ TxTimeoutException.

6. Application Programming Interface (API)

6.1 Type Definitions

None

6.2 Macro Constants

None

6.3 Functions

Describes all functionalities of modules, group by feature or listed following SWS chapter 8

6.3.1 Communication Control

Service name:	Nm_DisableCommunication	
Syntax:	Std_ReturnType Nm_DisableCommunication (NetworkHandleType NetworkHandle)	
Service ID[hex]:	0x04	
Sync/Async:	Asynchronous	
Reentrancy:	Non-reentrant for the same NetworkHandle, reentrant otherwise	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	None	
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Disabling of NM PDU transmission ability has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Disable the NM PDU transmission ability For that purpose <BusNm>_DisableCommunication shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_DisableCommunication function is called if channel is configured as CAN)	
Available via:	Nm.h	

Service name:	Nm_EnableCommunication	
Syntax:	Std_ReturnType Nm_EnableCommunication (NetworkHandleType NetworkHandle)	
Service ID[hex]:	0x05	
Sync/Async:	Asynchronous	
Reentrancy:	Non-reentrant for the same NetworkHandle, reentrant otherwise	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	None	
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Enabling of NM PDU transmission ability has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Enable the NM PDU transmission ability	

	For that purpose <BusNm>_EnableCommunication shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_EnableCommunication function is called if channel is configured as CAN)
Available via:	Nm.h

6.3.2 Information Services

Service name:	Nm_SetUserData	
Syntax:	Std_ReturnType Nm_SetUserData (NetworkHandleType NetworkHandle, const uint8* nmUserDataPtr)	
Service ID[hex]:	0x06	
Sync/Async:	Synchronous	
Reentrancy:	Non-reentrant for the same NetworkHandle, reentrant otherwise	
Parameters (in):	NetworkHandle nmUserDataPtr	Identification of the NM-channel User data for the next transmitted NM message
Parameters (inout):	None	
Parameters (out):	None	
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Setting of user data has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Set user data for NM messages transmitted next on the bus For that purpose <BusNm>_SetUserData shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_SetUserData function is called if channel is configured as CAN)	
Available via:	Nm.h	

Service name:	Nm_GetUserData	
Syntax:	Std_ReturnType Nm_GetUserData (NetworkHandleType NetworkHandle, const uint8* nmUserDataPtr)	
Service ID[hex]:	0x07	
Sync/Async:	Synchronous	
Reentrancy:	Reentrant	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	nmUserDataPtr	Pointer where user data out of the last successfully received NM message shall be copied to
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Getting of user data has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Get user data out of the last successfully received NM message For that purpose <BusNm>_GetUserData shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_GetUserData function is called if channel is configured as CAN)	

Available via:	Nm.h
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Service name:	Nm_GetPduData	
Syntax:	Std_ReturnType Nm_GetPduData (NetworkHandleType NetworkHandle, const uint8* nmPduData)	
Service ID[hex]:	0x08	
Sync/Async:	Synchronous	
Reentrancy:	Reentrant	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	nmPduData	Pointer where Nm PDU shall be copied to.
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Getting of NM PDU data has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Get the whole PDU data out of the most recently received NM message. For that purpose <BusNm>_GetPduData shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_GetPduData function is called if channel is configured as CAN)	
Available via:	Nm.h	

Service name:	Nm_GetNodeIdentifier	
Syntax:	Std_ReturnType Nm_GetNodeIdentifier (NetworkHandleType NetworkHandle, const uint8* nmNodeIDPtr)	
Service ID[hex]:	0x0a	
Sync/Async:	Synchronous	
Reentrancy:	Non-reentrant for the same NetworkHandle, reentrant otherwise	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	nmNodeIDPtr	Pointer where node identifier out of the last successfully received NM-message shall be copied to
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Getting of the node identifier out of the last received NM-message has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Get node identifier out of the last successfully received NM-message For that purpose <BusNm>_GetNodeIdentifier shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_GetNodeIdentifier function is called if channel is configured as CAN)	
Available via:	Nm.h	

Service name:	Nm_GetLocalNodeIdentifier	
Syntax:	Std_ReturnType Nm_GetLocalNodeIdentifier (

	NetworkHandleType NetworkHandle, const uint8* nmNodeIdPtr)	
Service ID[hex]:	0x0b	
Sync/Async:	Synchronous	
Reentrancy:	Non-reentrant for the same NetworkHandle, reentrant otherwise	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	nmNodeIdPtr	Pointer where node identifier of the local node shall be copied to
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Getting of the node identifier out of the last local node has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Get node identifier configured for the local node. For that purpose <BusNm>_GetLocalNodeIdentifier shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_GetLocalNodeIdentifier function is called if channel is configured as CAN)	
Available via:	Nm.h	

Service name:	Nm_GetVersionInfo	
Syntax:	void Nm_GetVersionInfo (Std_VersionInfoType* nmVerInfoPtr)	
Service ID[hex]:	0x0f	
Sync/Async:	Synchronous	
Reentrancy:	Reentrant	
Parameters (in):	None	
Parameters (inout):	None	
Parameters (out):	nmVerInfoPtr	Pointer to where to store the version information of this module
Return Value:	None	
Description:	This service returns the version information of this modules	
Available via:	Nm.h	

Service name:	Nm_RepeatMessageRequest	
Syntax:	Std_ReturnType Nm_RepeatMessageRequest (NetworkHandleType NetworkHandle)	
Service ID[hex]:	0x09	
Sync/Async:	Asynchronous	
Reentrancy:	Non-reentrant for the same NetworkHandle, reentrant otherwise	
Parameters (in):	NetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	None	
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Getting of the node identifier out of the last local node has failed

	NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Get node identifier configured for the local node. For that purpose <BusNm>_GetLocalNodeIdentifier shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_GetLocalNodeIdentifier function is called if channel is configured as CAN)
Available via:	Nm.h

Service name:	Nm_GetState	
Syntax:	Std_ReturnType Nm_GetState (NetworkHandleType nmNetworkHandle, Nm_StateType* nmStatePtr, Nm_ModeType* nmModePtr)	
Service ID[hex]:	0x0e	
Sync/Async:	Synchronous	
Reentrancy:	Reentrant	
Parameters (in):	nmNetworkHandle	Identification of the NM-channel
Parameters (inout):	None	
Parameters (out):	nmStatePtr nmModePtr	Pointer where state of the network management shall be copied to Pointer to the location where the mode of the network management shall be copied to
Return Value:	Std_ReturnType	E_OK: No error E_NOT_OK: Getting of NM state has failed NetworkHandle does not exist (development only) Module not yet initialized (development only)
Description:	Returns the state of the network management The function <BusNm>_GetState shall be called in case NmBusType is not set to NM_BUSNM_LOCALNM (e.g. CanNm_GetState function is called if channel is configured as CAN)	
Available via:	Nm.h	

7. Generator

7.1 Generator Option

Option	Description
-G,--Generation	Symbolic parameters to be used for fore generation (skip validation).
-H,--Help	Display this help message.
-I,--Input <I>	ECU description file path of the module for which generation tool need to run.
-L,--Log	Symbolic parameters to be used for generation error log.
-M,--Module <M>	Specify module name and version to be generated code for.
-T,--Top_path <T>	Symbolic parameters to be used for set path of module.
-V,--Validate	Symbolic parameters to be used for invoking validation checks.
-O, --Output <O>	Project-relative path to location where the generated code is to be placed.
-B, --Tool_path 	Location where file .jar (Nm_R44/ generator/ com.autron.odin.generator.bsw.nm_x.x.x.jar)

7.2 Generator Message

7.2.1 Error Messages

ERR0290001: Unexpected Error Found. This error may be due to the incorrect configuration of the element(s) 'Parameter Name'. If the error is not resolved, then please contact HYUNDAI AUTOEVER Co.,Ltd.

This error occurs when the dependency module(s) is unexpected configuration.

Parameter	Error occurs when
ComMChannelId	ComMChannelId is out range of 0..255 or not unique or not configured
ComMNmVariant	ComMNmVariant is not configured
CanNmPassiveModeEnabled	CanNmPassiveModeEnabled is not configured
CanNmComUserDataSupport	CanNmComUserDataSupport is not configured
CanNmTimeoutTime	CanNmTimeoutTime is not configured
CanNmWaitBusSleepTime	CanNmWaitBusSleepTime is not configured
CanNmComMNetworkHandleRef	There is no value of CanNmComMNetworkHandleRef equal to value of NmComMChannelRef
FrNmPassiveModeEnabled	FrNmPassiveModeEnabled is not configured
FrNmComUserDataSupport	FrNmComUserDataSupport is not configured
FrNmComMNetworkHandleRef	There is no value of FrNmComMNetworkHandleRef equal to value of NmComMChannelRef
FrNmRepetitionCycle	FrNmRepetitionCycle is not configured
FrNmChannelHandle	FrNmChannelHandle is not configured or incorrect
FrIfGdCycle	FrIfGdCycle is not configured
UdpNmPassiveModeEnabled	UdpNmPassiveModeEnabled is not configured
UdpNmComUserDataSupport	UdpNmComUserDataSupport is not configured
UdpNmComMNetworkHandleRef	There is no value of UdpNmComMNetworkHandleRef equal to value of NmComMChannelRef
UdpNmTimeoutTime	UdpNmTimeoutTime is not configured
UdpNmWaitBusSleepTime	UdpNmWaitBusSleepTime is not configured
UdpNmComMNetworkHandleRef	There is no value of UdpNmComMNetworkHandleRef equal to value of NmComMChannelRef
<GenericNm> PassiveModeEnabled	<GenericNm> PassiveModeEnabled is not configured
<GenericNm> ComUserDataSupport	<GenericNm> ComUserDataSupport is not configured
<GenericNM> ComMChannelRef	There is no value of <GenericNM> ComMChannelRef equal to value of NmComMChannelRef
ComHandleId	ComHandleId is not configured or not of range 0...65535

ERR0290002: 'Mandatory Module' Component is not present in the input file(s).

This error occurs when necessary file(s) input are missing. 'Mandatory Module' could be Nm or ComM or MDT.

ERR0290003: "<BusNm>" Component is not present in the input file(s).

This error occurs, if NmStandardBusType is set to NM_BUSNM_CANNM or NM_BUSNM_FRNM or NM_BUSNM_UDPNM or NM_BUSNM_J1939NM or NmGenericBusNmPrefix is set to <GenericNm> but (CanNm or FrNm or UdpNm or J1939Nm or <GenericNm>) module is not present in the input file(s)

ERR0290004: 'Com' Component is not present in the input file(s).

This error occurs, if parameter NmStateReportEnabled is set to <true/1> and NmStateReportSignalRef is configured but Com module is not present in the input file(s).

ERR0290005: 'FrIf' Component is not present in the input file(s).

This error occurs, if NmStandardBusType is set to NM_BUSNM_FRNM and parameter

NmCoordinatorSupportEnabled is set to <true/1> and NmCoordClusterIndex is defined but FrIf module is not present in the input file(s).

ERR0290006: Parameter 'Parameter Name' in container 'Container Name' should be configured.

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

Container Name	Parameter Name
BSW-IMPLEMENTATION	AR-RELEASE-VERSION
	VENDOR-ID
	SW-VERSION
BSW-MODULE-DESCRIPTION	MODULE-ID
NmChannelConfig	NmChannelSleepMaster
	NmPassiveModeEnabled
	NmStateReportEnabled
	NmSynchronizingNetwork
	NmComMChannelRef
NmGenericBusNmConfig	NmGenericBusNmPrefix
	NmGenericBusNmShutdownTime
NmStandardBusNmConfig	NmStandardBusType
NmGlobalConstants	NmNumberOfChannels
NmGlobalProperties	NmDevErrorDetect
	NmVersionInfoApi
NmGlobalFeatures	NmBusSynchronizationEnabled
	NmCarWakeUpRxEnabled
	NmComControlEnabled
	NmCoordinatorSupportEnabled
	NmCoordinatorSyncSupport
	NmPduRxIndicationEnabled
	NmRemoteSleepIndEnabled
	NmStateChangeIndEnabled
	NmUserDataEnabled

ERR0290007: The configured value for parameter 'Parameter Name' in container 'Container Name' should follow the pattern.

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

Parameter Name	Container Name	Pattern	Example
AR-RELEASE-VERSION	BSW-IMPLEMENTATION	[0-9]+.[0-9]+.[0-9]+	4.4.0
SW-VERSION		[0-9]+.[0-9]+.[0-9]+	1.1.0
NmGenericBusNmPrefix	NmGenericBusNmPrefix	[a-zA-Z][a-zA-Z0-9_]*	GenericNm
NmHeaderFileInclusion	NmGlobalFeatures	[a-zA-Z][a-zA-Z0-9_]*.h	Rte_Nm.h
NmCarWakeUpCallout	NmGlobalFeatures	[a-zA-Z][a-zA-Z0-9_]*	Nm_CarWakeUpCallout
NmStateChangeIndUserCallout	NmChannelConfig	[a-zA-Z][a-zA-Z0-9_]*	Rte_Nm_StateChangeIndication
NmPduRxIndUserCallout	NmChannelConfig	[a-zA-Z][a-zA-Z0-9_]*	Rte_Nm_PduRxIndication
NmRepeatMsgIndUserCallout	NmChannelConfig	[a-zA-Z][a-zA-Z0-9_]*	Rte_Nm_RepeatMessageIndication
NmTxTimeoutExceptionUserCallout	NmChannelConfig	[a-zA-Z][a-zA-Z0-9_]*	Rte_Nm_TxTime

outException

ERR0290008: Value of parameter 'Parameter Name' in container 'Container Name' is configured <value of ParameterName>. It should be configured within range of <Min Value> - <Max Value>.

This error occurs, when value of parameter 'Parameter Name' is configured out of range.

Parameter Name	Container Name	Min Value	Max Value
NmNumberOfChannels	NmGlobalConstants	1	255
NmCycletimeMainFunction	NmGlobalProperties	0	65.535
NmGlobalCoordinatorTime	NmGlobalFeatures	0	65.535
NmCoordClusterIndex	NmChannelConfig	0	255
NmGenericBusNmShutdownTime	NmGenericBusNmConfig	0	65.535

ERR0290009: Value of the parameter 'Parameter Name' in the container 'Container Name' is configured as <value of Parameter Name>. It should be configured either <Min Value> or <Max Value>.

This error occurs, when value of parameter 'Parameter Name' is configured not <true/1> or <false/0>

Parameter Name	Container Name	Min Value	Max Value
NmDevErrorDetect	NmGlobalProperties	False/0	True/1
NmVersionInfoApi		False/0	True/1
NmBusSynchronizationEnabled	NmGlobalFeatures	False/0	True/1
NmCarWakeUpRxEnabled		False/0	True/1
NmComControlEnabled		False/0	True/1
NmCoordinatorSupportEnabled		False/0	True/1
NmCoordinatorSyncSupport		False/0	True/1
NmGlobalCoordinatorTime		False/0	True/1
NmPduRxIndicationEnabled		False/0	True/1
NmRemoteSleepIndEnabled		False/0	True/1
NmStateChangeIndEnabled		False/0	True/1
NmUserDataEnabled		False/0	True/1
NmActiveCoordinator	NmChannelConfig	False/0	True/1
NmChannelSleepMaster		False/0	True/1
NmComUserDataSupport		False/0	True/1
NmPassiveModeEnabled		False/0	True/1
NmStateReportEnabled		False/0	True/1
NmSynchronizingNetwork		False/0	True/1

ERR0290010: Number of Channels configured is <1..255> which should be equal to the value configured is <1..255> for parameter 'NmNumberOfChannels' in container 'NmGlobalConstants'.

This error occurs, if the number of channels configured is not equal to the value configured for the parameter 'NmNumberOfChannels' in the container NmGlobalConstants.

ERR0290011: Parameter 'NmCycletimeMainFunction' in container 'NmGlobalProperties' should not be configured as <0> when parameter 'NmCoordinatorSupportEnabled' in container 'NmGlobalFeatures' is configured as <true/1>.

This error occurs, when parameter NmCoordinatorSupportEnabled is set to <true/1> but parameter NmCycletimeMainFunction is configured 0.

ERR0290012: Parameter 'NmCycletimeMainFunction' in container 'NmGlobalProperties' is should be configured when parameter NmCoordinatorSupportEnabled in container 'NmGlobalFeatures' is configured as <true/1>.

This error occurs, when parameter NmCoordinatorSupportEnabled is set to <true/1> but parameter NmCycletimMainFuntion is not configured.

ERR0290013: Parameter 'NmBusSynchronizationEnabled' in container 'NmGlobalFeatures' should be

configured as <true/1> when parameter 'NmCoordinatorSupportEnabled' in container 'NmGlobalFeatures' is configured as <true/1>.

This error occurs, when parameter NmCoordinatorSupportEnabled is set to <true/1> but parameter NmBusSynchronizationEnabled is not set TRUE.

ERR0290014: Parameter 'NmGlobalCoordinatorTime' in container 'NmGlobalFeatures' should be configured when parameter 'NmCoordinatorSupportEnabled' in container 'NmGlobalFeatures' is configured as <true/1>.

This error occurs, when parameter NmCoordinatorSupportEnabled is set to <true/1> but parameter NmGlobalCoordinatorTime is not configured

ERR0290015: Parameter 'NmRemoteSleepIndEnabled' in container 'NmGlobalFeatures' should be configured as <true/1> when parameter 'NmCoordinatorSupportEnable' in container 'NmGlobalFeatures' is configured as <true/1>.

This error occurs, when parameter NmCoordinatorSupportEnabled is set to <true/1> but parameter NmRemoteSleepIndEnabled is not set <true/1>.

ERR0290016: Parameter 'NmStandardBusType' is not allowed configured value to NM_BUSNM_LOCALNM since the value of parameter 'NmCoordClusterIndex' in container 'NmChannelConfig' having short name <Channel Short Name> is not configured.

This error occurs, if parameter NmCoordClusterIndex in container NmChannelConfig having short name is not configured and parameter NmStandartBusType is configured to NM_BUSNM_LOCALNM.

ERR0290017: Parameter 'NmGenericBusNmShutdownTime' in container NmGenericBusNmConfig is configured as <value of NmGenericBusNmShutdownTime> should equal or less than the value of parameter 'NmGlobalCoordinatorTime' in container 'NmGlobalFeatures'.

This error occurs, when parameter NmGenericBusShutdownTime is configured larger than value of parameter NmGlobalCoordinatorTime.

ERR0290018: The reference path should be not empty for parameter 'NmComMChannelRef' in container 'NmChannelConfig', having short name<channel Short Name>.

This error occurs, when parameter NmComMChannelRef in NmChannelConfig is not set.

ERR0290019: The reference path 'Reference value' provided for parameter 'NmComMChannelRef' in container 'NmChannelConfig', having short name <channel Short Name> is incorrect.

This error occurs, when reference path provided for parameter NmComMChannelRef is incorrect.

ERR0290020: Parameter 'NmComMChannelRef' in container 'NmChannelConfig' having short name <Channel Short Name> should be unique.

This error occurs, when reference path in NmComMChannelRef configured is not unique.

ERR0290021: Parameter 'NmCoordClusterIndex' in container 'NmChannelConfig' having short name <Channel Short Name> should be not configured since Coordinator Support J1939Nm is not needed.

This error occurs, if NmStandardBusType is set as NM_BUSNM_J1939NM but parameter NmCoordClusterIndex is configured.

ERR0290022: Parameter 'NmActiveCoordinator' in container 'NmChannelConfig' having short name <Channel Short Name> should be configured if parameter 'NmCoordClusterIndex' in the corresponding channel is defined.

This error occurs, when parameter NmCoordinatorSyncSupport is set to <true/1> and parameter NmCoordClusterIndex configured but parameter NmActiveCoordinator is not configured.

ERR0290023: Since parameter 'NmCoordClusterIndex' in container 'NmChannelConfig' having short name '<Channels Short Name>' are set to same value <ValueOfNmCoordClusterIndex>, only one channel can have

parameter 'NmActiveCoordinator' is set to <false/0>.

This error occurs, when parameter NmCoordinatorSyncSupport is set to <true/1> and in one cluster (same value NmCoordClusterIndex) if existing more than one channel have configured value of NmActiveCoordinator set to <false/0>.

ERR0290024: Parameter 'NmActiveCoordinator' in container 'NmChannelConfig' having short name <Channel Short Name> should be configured as <true/1> if parameter 'NmStandardBusType' in the corresponding channel is configured as NM_BUSNM_LOCALNM.

This error occurs, when parameter NmCoordinatorSyncSupport is set to <true/1> and NmStandardBusType is configured as NM_BUSNM_LOCALNM and parameter NmActiveCoordinator is configured <false/0>.

ERR0290025: When a NM Cluster contains only one NM Channel, in container 'NmChannelConfig' having short name <Channel Short Name> parameter 'NmActiveCoordinator' need to be configured as <true/1> and parameter 'NmChannelSleepMaster' need to be configured as <false/0> to allow the channel to coordinate itself.

This error occurs, when NmCoordClusterIndex is defined and no other channel has same value of NmCoordClusterIndex and parameter NmActiveCoordinator configured <false/0> and parameter NmChannelSleepMaster configured <true/1>.

ERR0290026: The value of parameter 'NmPassiveModeEnabled' in container 'NmChannelConfig' having short name <Channel Short Name> should be equal to the value of parameter '<BusNm>PassiveModeEnabled' of <BusNm> component.

This error occurs, when parameter NmPassiveModeEnabled does not have same value with <BusNm>PassiveModeEnabled.

ERR0290027: Parameter 'NmPassiveModeEnabled' in container 'NmChannelConfig' having short name <Channel Short Name> should be set to <false/0> when parameter 'ComMNmVariant' is set to FULL.

This error occurs, when parameter ComMNmVariant is set to FULL and NmPassiveModeEnabled is configured <true/1>.

ERR0290028: Since parameter 'NmCoordClusterIndex' in container 'NmChannelConfig' having short name <Channel Short Name> is defined, parameter 'NmPassiveModeEnabled' should be configured as <false/0> for the corresponding channel.

This error occurs, when parameter NmPassiveModeEnabled is configured <true/1> and parameter NmCoordClusterIndex is defined.

ERR0290029: Parameter 'Parameter Name' in container 'Container Name' should be configured <false/0> when all channels have parameter 'NmPassiveModeEnabled' in container 'NmChannelConfig' configured as <true/1>.

This error occurs, when all channels configured parameter NmPassiveModeEnabled is <true/1> but parameter 'Parameter Name' configured <true/1>

Parameter Name	Container Name
NmCoordinatorSupportEnabled	NmGlobalFeature
NmRemoteSleepIndEnabled	

ERR0290030: Since parameter 'NmCoordClusterIndex' in container 'NmChannelConfig' having short name '<Channels Short Name>' are set to same value <ValueOfNmCoordClusterIndex>, only one channel can have parameter 'NmSynchronizingNetwork' is set to <true/1>.

This error occurs, when in one cluster (NmCoordClusterIndex) existing more than one channels have configured value of NmSynchronizingNetwork is set to <true/1>.

ERR0290031: Parameter 'NmSynchronizingNetwork' in container 'NmChannelConfig' having short name <Channel Short Name> should be set to <false/0> since parameter 'NmSynchronizingNetwork' can only be

set to <true/1> if parameter 'NmActiveCoordinator' is <true/1> for all channels which have the same value of parameter 'NmCoordClusterIndex'.

This error occurs, when one channel configured parameter NmActiveCoordinator is <false/0> within parameter NmSynchronizingNetwork configured is <true/1>.

ERR0290032: The value of parameter 'NmComUserDataSupport' in container 'NmChannelConfig' having short name <Channel Short Name> should be equal to the value of parameter <BusNm>ComUserDataSupport of <BusNm> component.

This error occurs, when parameter NmComUserDataSupport is not equal to <BusNm>ComUserDataSupport.

ERR0290033: Parameter 'NmStateReportSignalRef' the container 'NmChannelConfig' having short name <Channel Short Name> should be configured, since value of parameter 'NmStateReportEnabled' in the corresponding channel is configured as <true/1>.

This error occurs, when parameter NmStateReportEnabled configured is <true/1> but parameter NmStateReportSignalRef is not define.

ERR0290034: The reference path 'Reference Path' provided for parameter 'NmStateReportSignalRef' in container 'NmChannelConfig', having short name <Channel Short Name> is incorrect.

This error occurs, when parameter NmStateReportEnabled configured is <true/1> but incorrect reference path is configured for parameter NmStateReportSignalRef.

ERR0290035: Parameter 'NmGlobalCoordinatorTime' in container 'NmGlobalFeatures' is configured as <value of NmGlobalCoordinator> should be equal to or larger than the maximum shutdown time of coordinated channels is calculated as <maximum of TSHUTDOWN_CHANNEL>.

This error occurs, when parameter NmGlobalCoordinatorTime less than the maximum shutdown time of coordinated channel.

ERR0290036: The Shutdown Delay Timer of coordinated channel having short name <Channel Short Name> is calculated as <ShutdownDelayTimer value of corresponding channel> while parameter 'NmCycletimeMainFunction' in container 'NmGlobalProperties' is configured as <value of 'NmCycletimeMainFunction'>. Hence the result of ShutdownDelayTimer divided to NmCycletimeMainFunction is not an integer.

This error occurs, when ShutdownDelayTimer divided to NmCycletimeMainFunction is NOT an integer.

ERR0290037: Parameter NmHeaderFileInclusion in container NmGlobalFeatures should be configured since existing the valid configuration of the callout function(s).

This error occurs, when parameter callout configured but Header File not exist.

ERR0290038: There is no configuration of parameter NmClusterIndex when NmCoordinatorSupportEnabled is set to <true/1>.

This error occurs, when parameter CoordinatorSupportEnabled is set to <true/1> but no NmClusterIndex is configured.

ERR0290039: When configuration is Post-Build then 'Implementation Config Variant' and 'Post Build Variant Used' must configuration is Post-Build

This error occurs, when 'Implementaion Config Variant' is TRUE and 'Post Build Variant Used' is FALSE OR 'Implementation Config Variant' is FALSE and 'Post Build Variant Used' is TRUE. (Support Post-Build)

ERR0290040: When configuration is Post-Build but 'Implementation Config Variant' and 'Post Build Variant Used' configuration not Post-Build

This error occurs, when configuration is Post-Build but 'Implementation Config Variant' and 'Post Build Variant Used' is configuration R-44. Please check again configuration of 'Implementation Config Variant' and 'Post-Build Variant Used'

ERR0290041: IF config is Post-Build but /EcucDefs/EcuC/EcucPostBuildVariants were not configured or /EcucDefs/EcuC is not existed

The Nm module supported Post-Build but There are no variants configured in ECUC

ERR0290042: IF config is Post-Build but Nm module wasn't included all EcuC post-build variants.

Mismatch post-build variant with EcuC module, the module's post-build variants should include all EcuC post-build variants.

7.2.2 Warning Messages

7.2.3 Information Messages

INF0290001: AUTOSAR Release version <version> configured for parameter 'AR-RELEASE-VERSION' in provided MDT file is incorrect. AUTOSAR Release version should be one of the following 4.4.0.

This information occurs, if the value of the element AR-RELEASE-VERSION present in the BSW Module Description template is configured other than 4.4.0.

INF0290002: Parameter 'Parameter Name' in container 'Container Name' shall only valid when the value of parameter 'Parameter Name1' in container 'Container Name1' is configured as <true/1>.

This information occurs, if the below mentioned parameters 'Parameter Name' are configured when value of the parameter 'Parameter Name1' is configured as <false/0>.

Parameter Name	Container Name	Parameter Name1	Container Name1
NmCycleTimeMainFunction	NmGlobalProperties	NmCoordinatorSupport-Enabled	NmGlobalFeatures
NmGlobalCoordinatorTime	NmGlobalFeatures		
NmBusSynchronizationEnabled			
NmCoordinatorSyncSupport			
NmCarWakeUpCallout		NmCarWakeUpRxEnabled	
NmCoordClusterIndex	NmChannelConfig	NmCoordinatorSupport-Enabled	
NmActiveCoordinator		NmCoordinatorSync-Support	
NmStateChangeIndUserCallout		NmStateChangeInd-Enabled	
NmPduRxIndUserCallout		NmPduRxIndication-Enabled	
NmStateReportSignalRef		NmStateReportEnabled	NmChannelConfig

INF0290003: Parameter 'NmGlobalCoordinatorTime' in container 'NmGlobalFeatures' is configured as <0> then the shutdown delay timer of all coordinated channels shall be set to <0>.

This information occurs, when parameter NmGlobalCoordinatorTime configured is 0.

INF0290004: Parameter 'Parameter Name' in container 'NmChannelConfig' having short name <Channel Short Name> is only valid when the value of parameter 'NmCoordClusterIndex' is configured in the corresponding channel.

This information occurs, when parameter NmCoordClusterIndex is not configured and <Parameter Name> is configured as <true/1>

Parameter Name	Container Name
NmChannelSleepMaster	NmChannelConfig
NmSynchronizingNetwork	

INF0290005: The value of parameter 'Parameter Name' in container 'NmChannelConfig' having short name <Channel Short Name> should be configured as <value> when parameter 'NmStandardBusType' is

configured to NM_BUSNM_J1939NM. Hence the Generation Tool shall reset the value of 'Parameter Name' as <Value>.

This information occurs, if parameter NmStandardType is configured to NM_BUSNM_J1939NM. and 'Parameter Name' configuration is <true/1>.

Parameter Name	Container Name	Value
NmActiveCoordinator	NmChannelConfig	False/0
NmPassiveModeEnabled		False/0
NmComUserDataSupport		False/0
NmSynchronizingNetwork		False/0
NmStateReportEnabled		False/0

INF0290006: Parameter 'NmChannelSleepMaster' in container 'NmChannelConfig' having short name <Channel Short Name> should be configured as <true/1> when parameter 'NmStandardBusType' is configured to NM_BUSNM_LOCALNM. Hence the Generation Tool shall reset the value of 'NmChannelSleepMaster' as <true/1>.

This information occurs, when parameter NmChannelSleepMaster configured is FALSE and NmStandardBusType is configured to NM_BUSNM_LOCALNM.

INF0290007: Parameter 'NmSynchronizingNetwork' in container 'NmChannelConfig' should be configured as <false/0> when the value of parameter 'NmNumberOfChannels' in container 'NmGlobalConstants' is configured as <1>. Hence the Generation Tool shall reset the value of 'NmSynchronizingNetwork' as <false/0>.

This information occurs, if parameter NmNumberOfChannels configured is 1 and parameter NmSynchronizingNetwork configured is TRUE.

INF0290008: Since the value of parameter 'NmComUserDataSupport' in container 'NmChannelConfig' having short name <Channel Short Name> is not configured. The Generation Tool shall set it to be equal to the value of parameter <BusNm>ComUserDataSupport.

This information occurs, when parameter NmComUserDataSupport is not configured and NmStandardBusType is not set to NM_BUSNM_J1939NM.

INF0290009: Parameter 'NmStateReportEnabled' in container 'NmChannelConfig' having short name <Channel Short Name> should be configured as <false/0> when parameter 'NmStateChangeIndEnabled' in container 'NmGlobalFeatures' or parameter 'NmComUserDataSupport' in the corresponding channel are configured as <false/0>. Hence the Generation Tool shall reset the value of 'NmStateReportEnabled' as <false/0>.

This information occurs, when parameter NmStateChangeIndEnabled configured is <false/0> or parameter NmComUserDataSupport configured is <false/0> but NmStateReportEnabled configured is <true/1>.

8. Generator

8.1 SWP Error Code List

None

9. Appendix

9.1 Function-specific setting guide

9.1.1 Check NM State of the lower layer has changed or not.

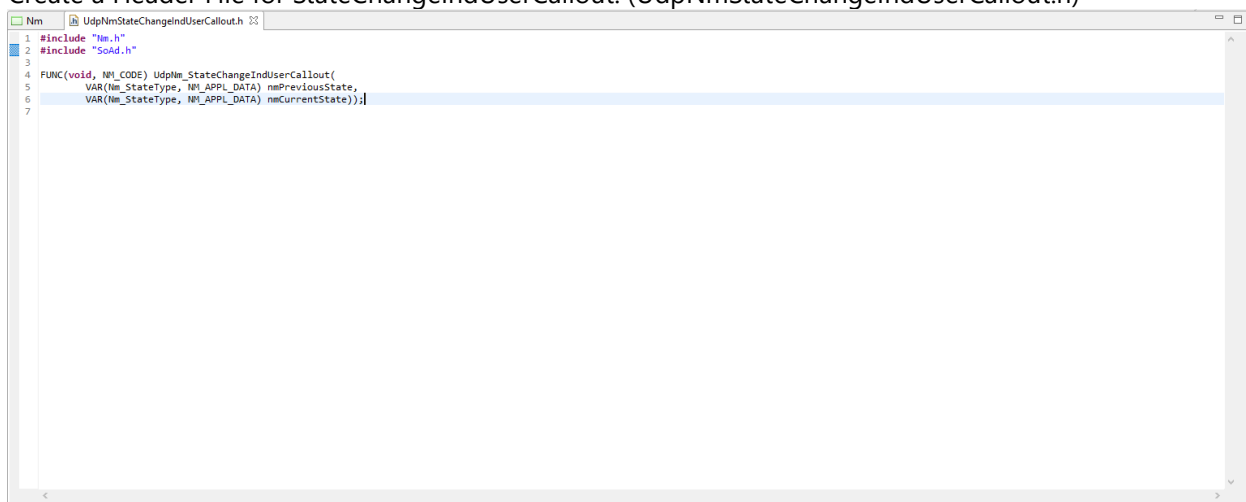
9.1.1.1 Example of disabling Routing when UdpNm State is ReadySleep, PrepareBusSleep

In the application, the code must be directly written according to the intended use and the specifications, and return value handling and exception handling must be included.

The code below is only a sample, and the platform is not responsible for problems caused by using the code below.

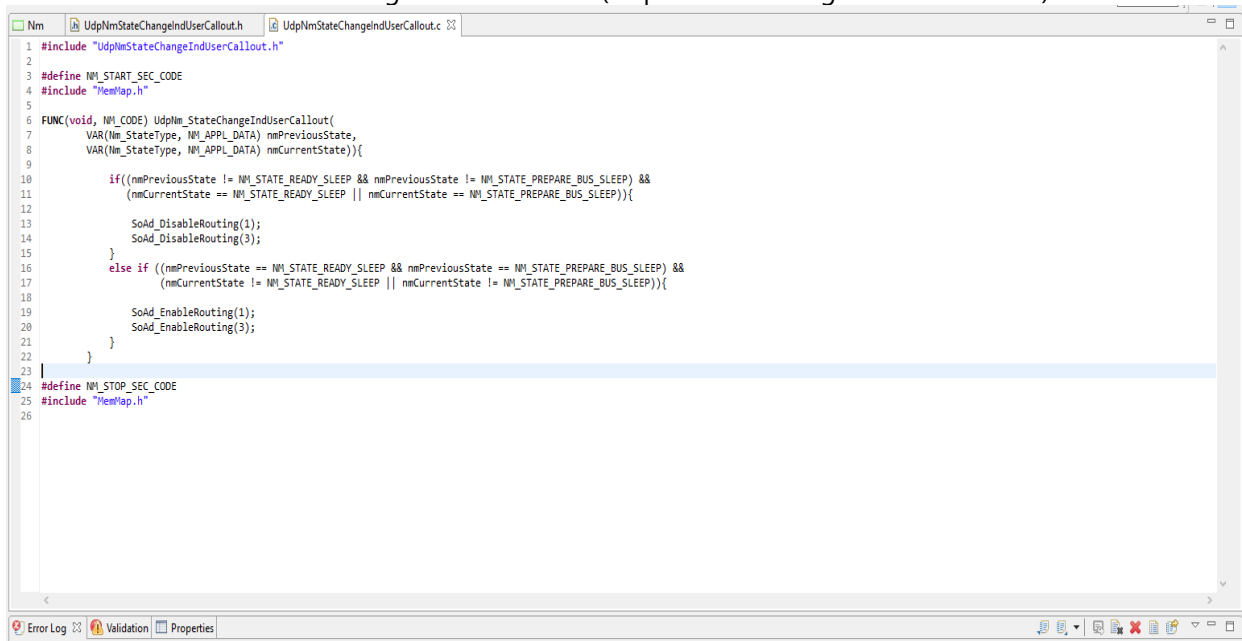
By adding ComplexDeviceDriverSwComponent, UserCallout Header and Source File can be included to be used up to Component Level.

1) Create a Header File for StateChangeIndUserCallout. (UdpNmStateChangeIndUserCallout.h)



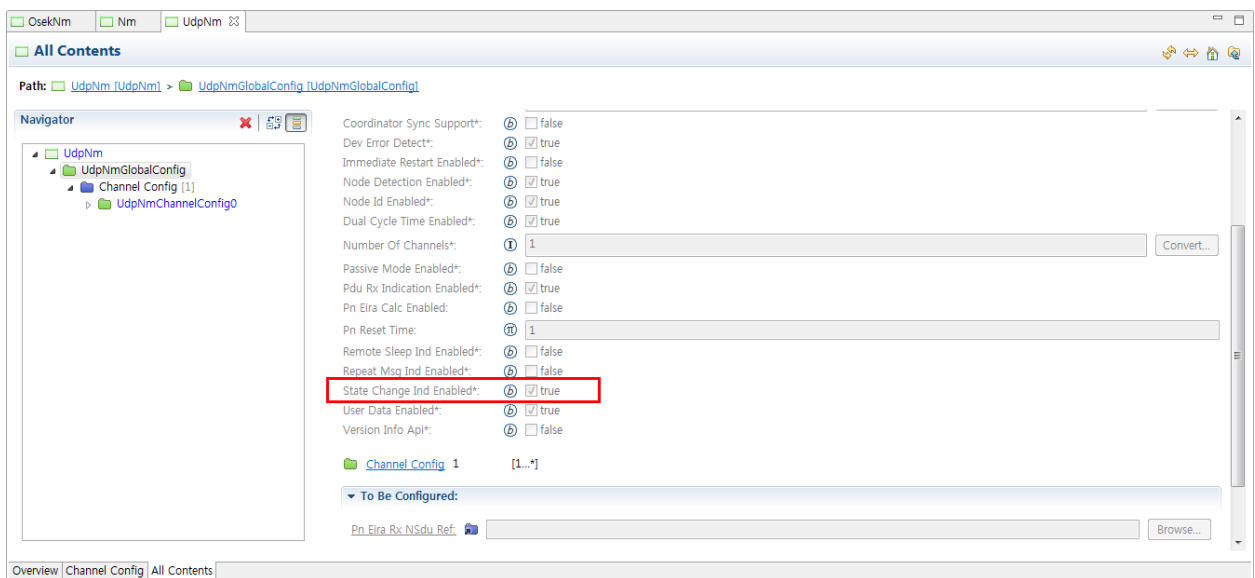
```
1 #include "Nm.h"
2 #include "SoAd.h"
3
4 FUNC(void, Nm_CODE) UdpNm_StateChangeIndUserCallout(
5     VAR(Nm_StateType, Nm_APPL_DATA) nmPreviousState,
6     VAR(Nm_StateType, Nm_APPL_DATA) nmCurrentState);
7
```


2) Create Source File for StateChangeIndUserCallout. (UdpNmStateChangeIndUserCallout.c)

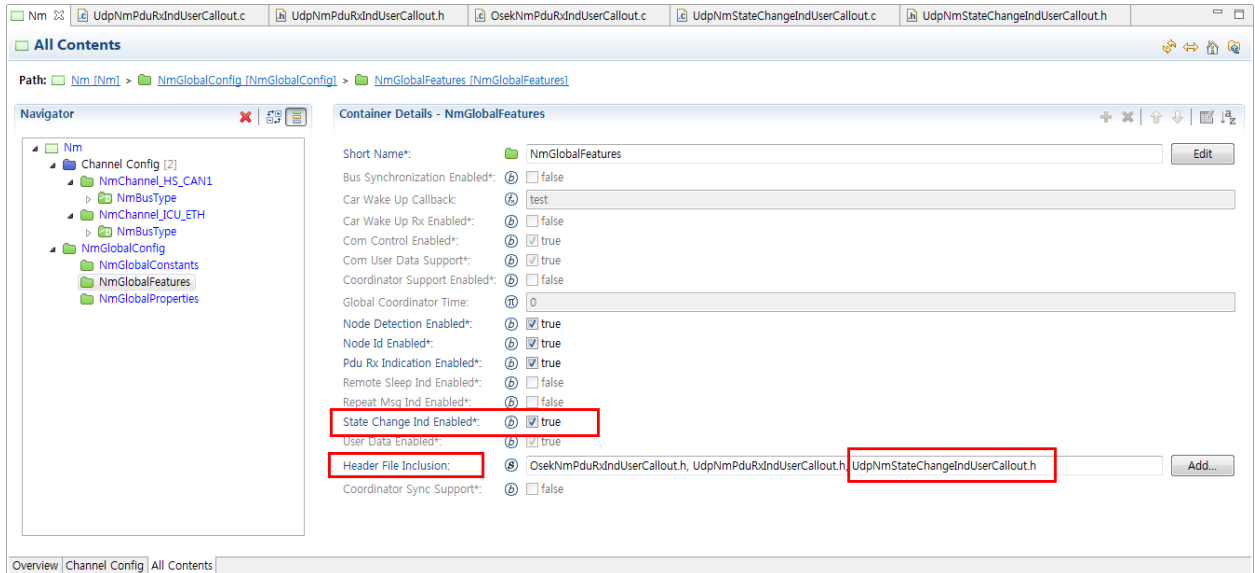


```
1 #include "UdpNmStateChangeIndUserCallout.h"
2
3 #define NM_START_SEC_CODE
4 #include "MemMap.h"
5
6 FUNC(void) UdpNm_StateChangeIndUserCallout(
7     VAR(Nm_StateType, NM_APPL_DATA) nmPreviousState,
8     VAR(Nm_StateType, NM_APPL_DATA) nmCurrentState){
9
10     if((nmPreviousState != NM_STATE_READY_SLEEP && nmPreviousState != NM_STATE_PREPARE_BUS_SLEEP) &&
11        (nmCurrentState == NM_STATE_READY_SLEEP || nmCurrentState == NM_STATE_PREPARE_BUS_SLEEP)){
12
13         SoAd_DisableRouting(1);
14         SoAd_DisableRouting(3);
15     }
16     else if ((nmPreviousState == NM_STATE_READY_SLEEP && nmPreviousState == NM_STATE_PREPARE_BUS_SLEEP) &&
17        (nmCurrentState != NM_STATE_READY_SLEEP || nmCurrentState != NM_STATE_PREPARE_BUS_SLEEP)){
18
19         SoAd_EnableRouting(1);
20         SoAd_EnableRouting(3);
21     }
22 }
23
24 #define NM_STOP_SEC_CODE
25 #include "MemMap.h"
26
```

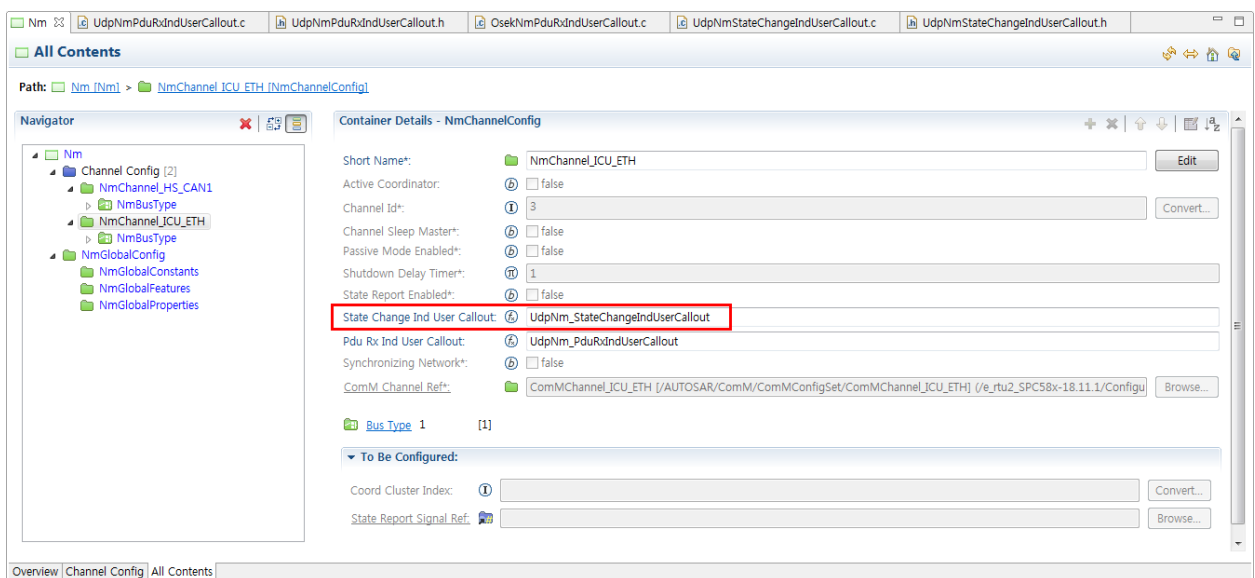
3) Set UdpNm/UdpNmGlobalConfig/StateChangeIndEnabled to true.



- 4) Nm/NmGlobalConfig/NmGlobalFeatures/NmStateChangeIndEnabled set to true.
Set Header File for StateChangeIndUserCallout in Nm/NmGlobalConfig/NmGlobalFeatures/NmHeaderFileInclusion.



- 5) Set the Function Name for StateChangeIndUserCallout in Nm/NmChannelConfig/StateChangeInd-UserCallout.



9.1.2 If you want to know the received Nm Pdu Data and Node Identifier

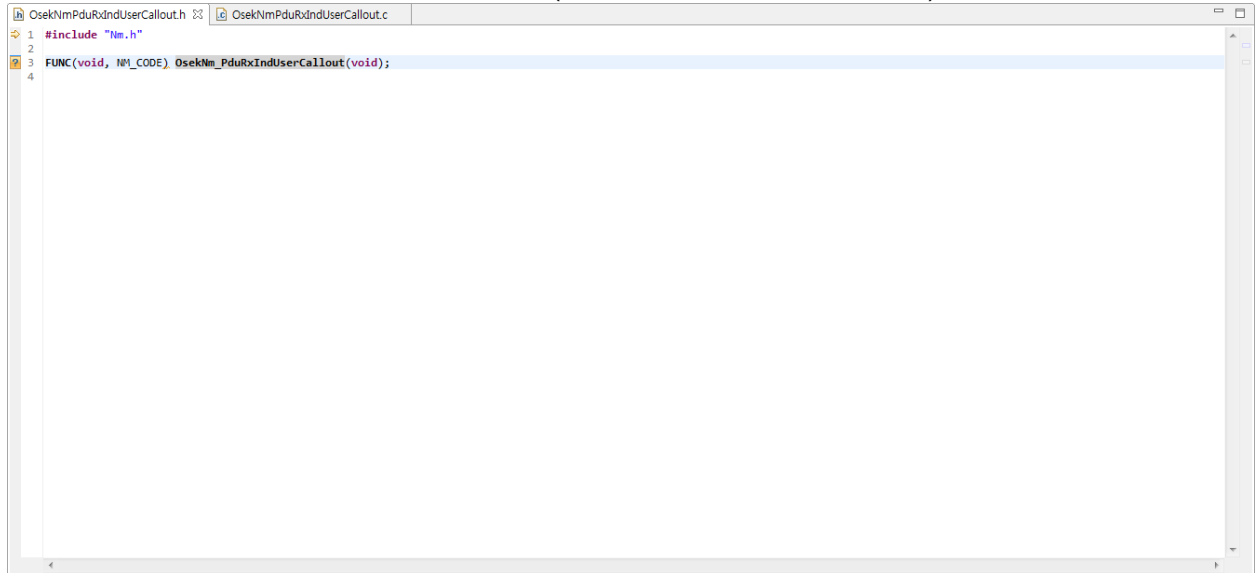
9.1.2.1 Example to know Pdu Data and Node Identifier when receiving OsekNm Nm Pdu

In the application, the code must be directly written according to the intended use and the controller specifications, and return value handling and exception handling must be included.

The code below is only a sample, and the platform is not responsible for problems caused by using the code below.

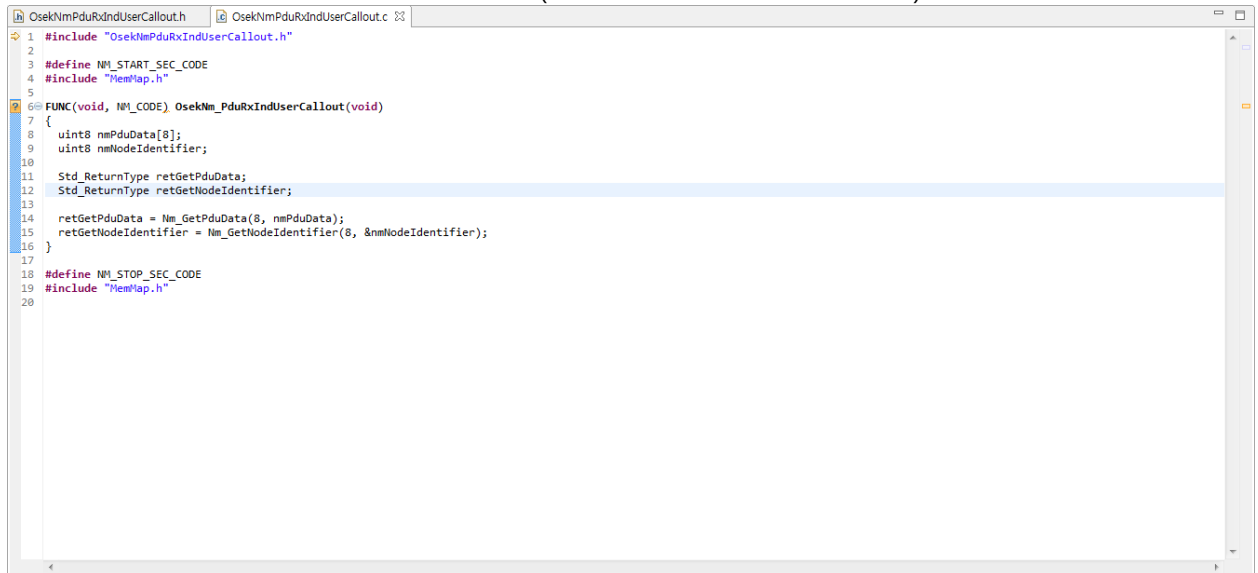
By adding ComplexDeviceDriverSwComponent, UserCallout Header and Source File can be included to be used up to Component Level.

1) Create a Header File for PduRxIndUserCallout. (OsekNmPduRxIndUserCallout.h)



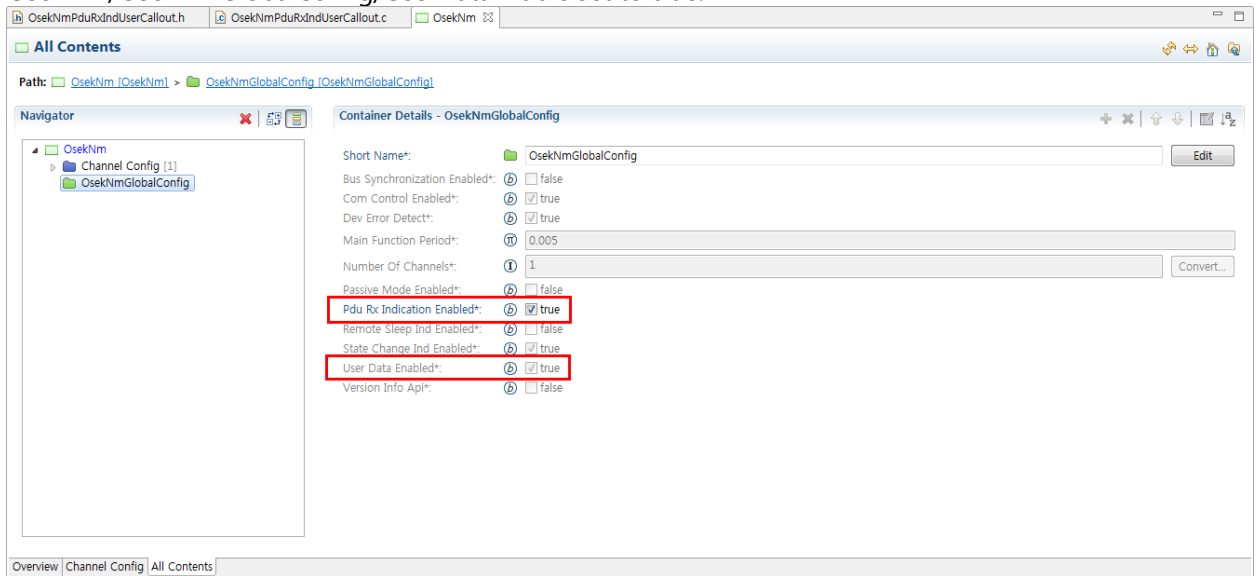
```
OsekNmPduRxIndUserCallout.h OsekNmPduRxIndUserCallout.c
1 #include "Nm.h"
2
3 FUNC(void, NM_CODE) OsekNm_PduRxIndUserCallout(void);
4
```

2) Create a source file for PduRxIndUserCallout. (OsekNmPduRxIndUserCallout.c)

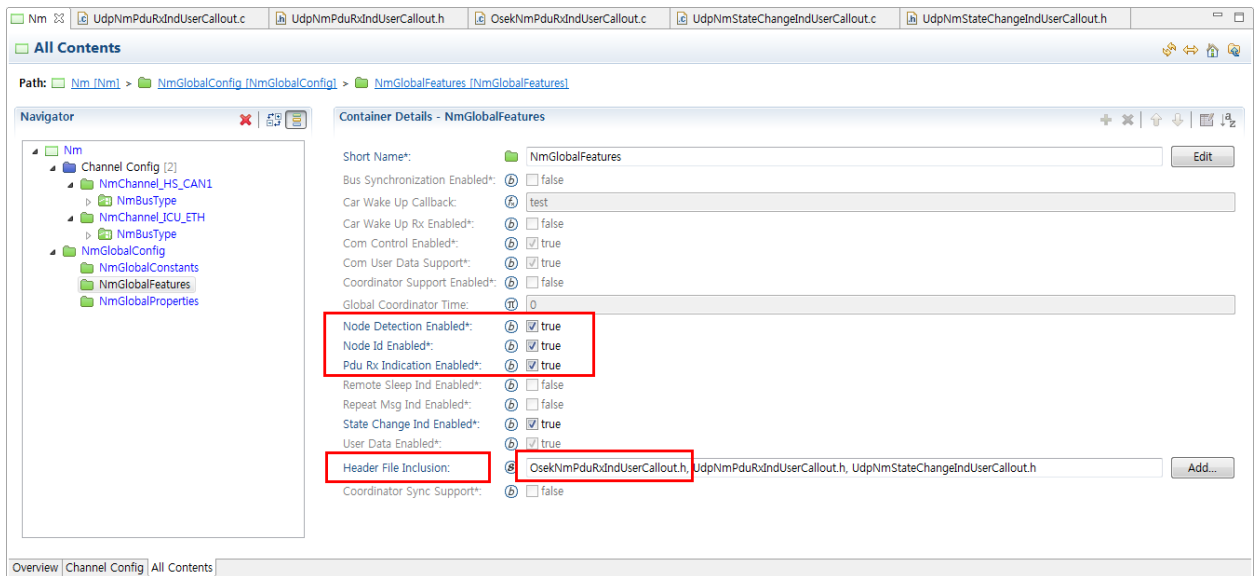


```
OsekNmPduRxIndUserCallout.h OsekNmPduRxIndUserCallout.c
1 #include "OsekNmPduRxIndUserCallout.h"
2
3 #define NM_START_SEC_CODE
4 #include "MemMap.h"
5
6 FUNC(void, NM_CODE) OsekNm_PduRxIndUserCallout(void)
7 {
8     uint8 nmPduData[8];
9     uint8 nmNodeIdentifier;
10
11     Std_ReturnType retGetPduData;
12     Std_ReturnType retGetNodeIdentifier;
13
14     retGetPduData = Nm_GetPduData(8, nmPduData);
15     retGetNodeIdentifier = Nm_GetNodeIdentifier(8, &nmNodeIdentifier);
16 }
17
18 #define NM_STOP_SEC_CODE
19 #include "MemMap.h"
20
```

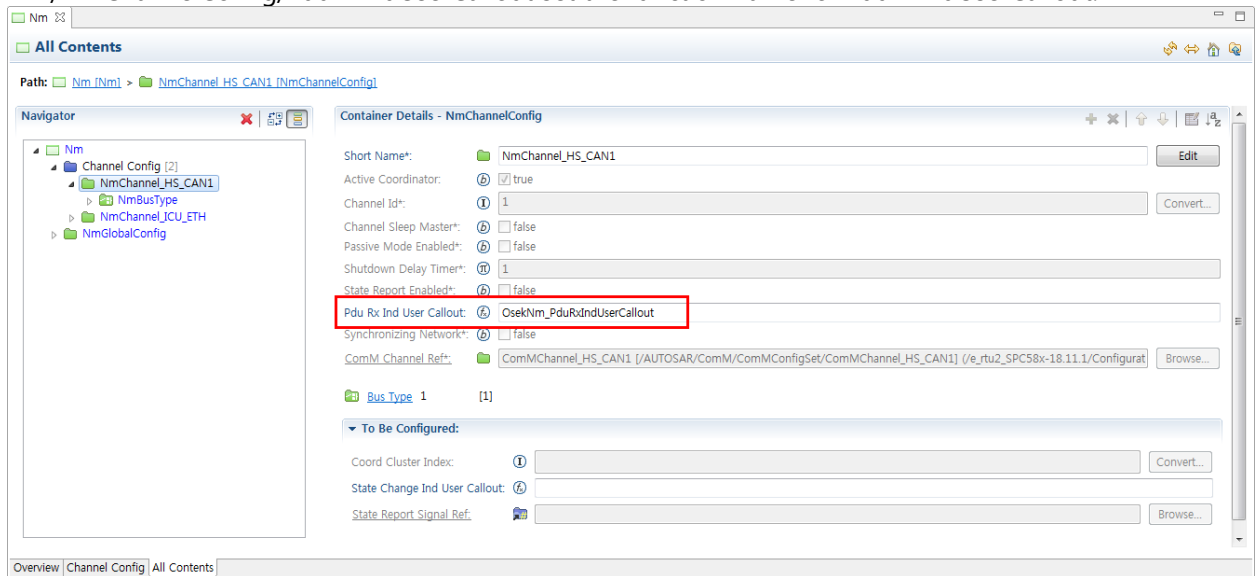
- 3) OsekNm/OsekNmGlobalConfig/PduRxIndicationEnabled set to true.
OsekNm/OsekNmGlobalConfig/UserDataEnable set to true.



- 4) Nm/NmGlobalConfig/NmGlobalFeatures/NodeDetectionEnabled set to true.
Nm/NmGlobalConfig/NmGlobalFeatures/NodeIdEnabled set to true.
Nm/NmGlobalConfig/NmGlobalFeatures/PduRxIndicationEnabled set to true.
Nm/NmGlobalConfig/NmGlobalFeatures/HeaderFileInclusion set Header File for PduRxIndUser-Callout



5) Nm/NmChannelConfig/PduRxIndUserCallout set the function name for PduRxIndUserCallout.



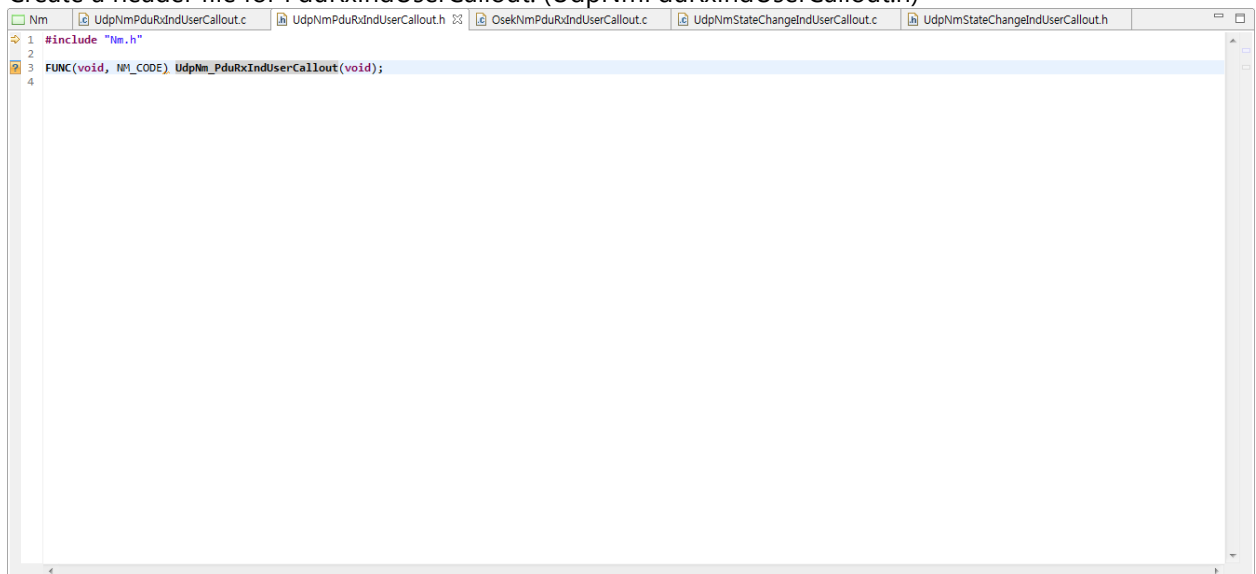
9.1.2.2 Example when you want to know Pdu Data and Node Identifier when receiving Nm Pdu of UdpNm

In the application, the code must be directly written according to the intended use and the controller specifications, and return value handling and exception handling must be included.

The code below is only a sample, and the platform is not responsible for problems caused by using the code below.

By adding ComplexDeviceDriverSwComponent, UserCallout Header and Source File can be included to be used up to Component Level.

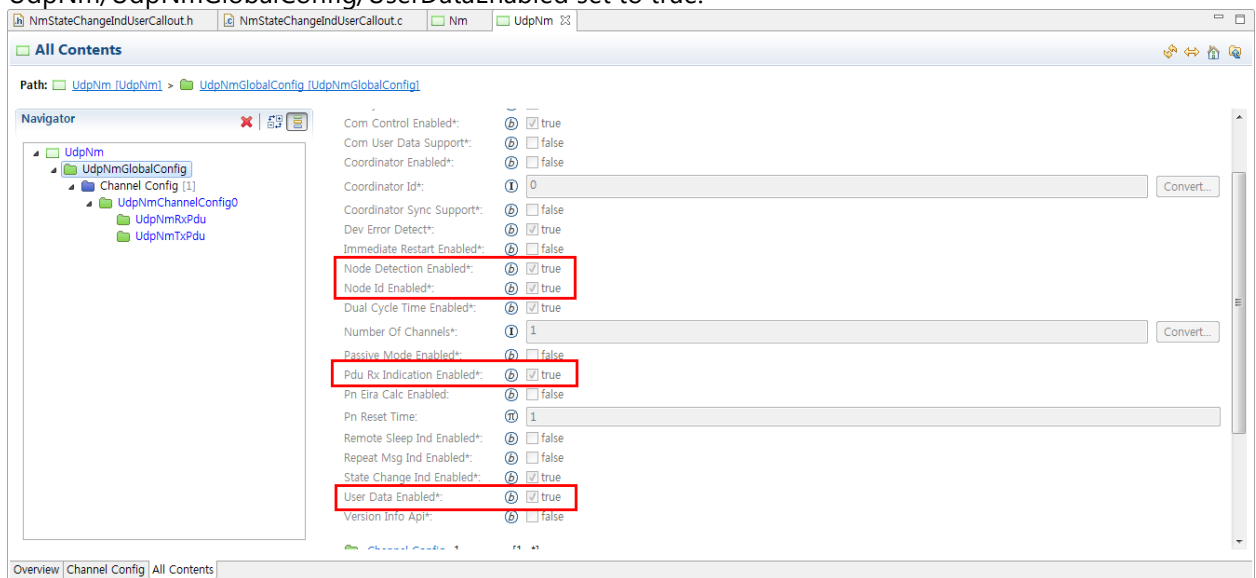
1) Create a header file for PduRxIndUserCallout. (UdpNmPduRxIndUserCallout.h)



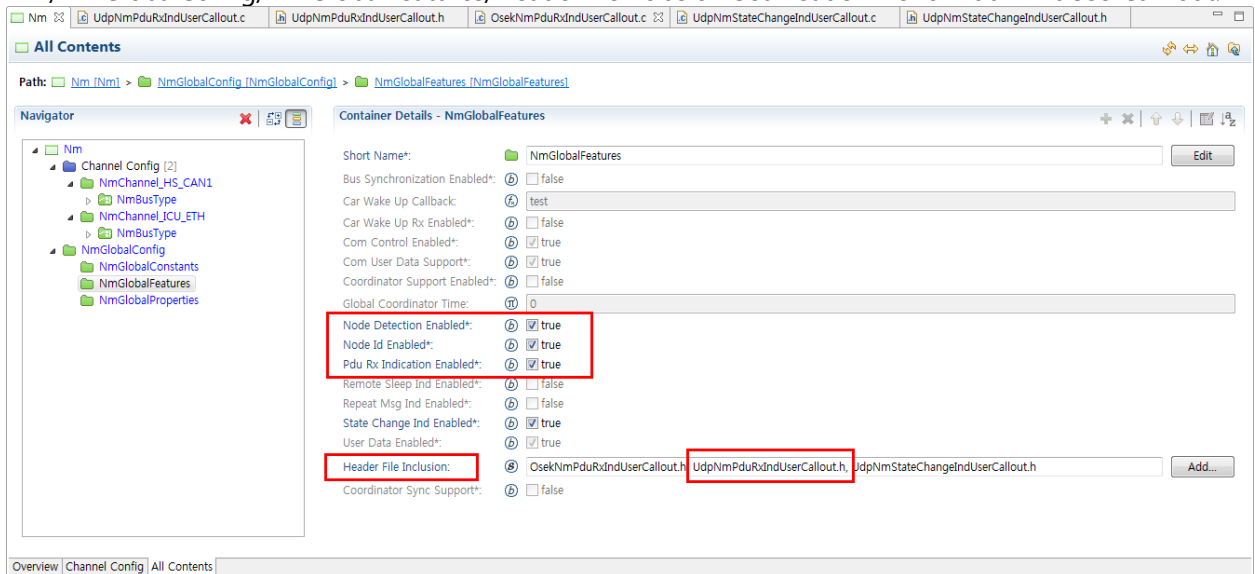
2) Create a source file for PduRxIndUserCallout. (UdpNmPduRxIndUserCallout.c)

```
1 #include "UdpNmPduRxIndUserCallout.h"
2
3 #define NM_START_SEC_CODE
4 #include "MemMap.h"
5
6 FUNC(void, NM_CODE) UdpNm_PduRxIndUserCallout(void)
7 {
8     uint8 nmPduData[8];
9     uint8 nmNodeIdentifier;
10
11     if (Nm_GetPduData(8, nmPduData) != E_OK)
12     {
13         // Exception Code
14     }
15
16     if (Nm_GetNodeIdentifier(8, &nmNodeIdentifier) != E_OK)
17     {
18         // Exception Code
19     }
20 }
21
22 #define NM_STOP_SEC_CODE
23 #include "MemMap.h"
24
```

- 3) UdpNm/UdpNmGlobalConfig/NodeDetectionEnabled set to true.
UdpNm/UdpNmGlobalConfig/NodeIdEnabled set to true.
UdpNm/UdpNmGlobalConfig/PduRxIndicationEnabled set to true.
UdpNm/UdpNmGlobalConfig/UserDataEnabled set to true.



- 4) Nm/NmGlobalConfig/NmGlobalFeatures/NodeDetectionEnabled set to true.
Nm/NmGlobalConfig/NmGlobalFeatures/NodeIdEnabled set to true.
Nm/NmGlobalConfig/NmGlobalFeatures/PduRxIndicationEnabled set to true
Nm/NmGlobalConfig/NmGlobalFeatures/HeaderFileInclusion Set Header File for PduRxIndUserCa-llout.



- 5) Set the Function Name for PduRxIndUserCallout in Nm / NmChannelConfig / PduRxIndUserCallout.

