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Known Limitations

None.

1 Introduction and functional overview

This specification specifies the functionality, API and the configuration of the **Data Distribution Service AUTOSAR Basic Software module (Dds BSW)** .

1.1 DDS protocol overview

The **Data Distribution Service (DDS)** is a middleware protocol and API standard from the Object Management Group (OMG).

A preliminary overview of DDS can be found into chapter 4 of AUTOSAR_RS_DDS or referring directly the OMG standard [1].

2 Acronyms and Abbreviations

2.1 Acronyms

For acronyms and abbreviations refer to [2, AUTOSAR glossary].

2.2 Abbreviations

None.

2.3 Glossary

- **DDS/non-DDS PDU:** PDU containing/NOT containing DDS data (e.g., PDU listed/not listed into [DdsAppDataTxPduCollection](#) or [DdsAppDataRxPduCollection](#) or [DdsDomainParticipantUnicastRtpsPduCollection](#) or [DdsDomainParticipantMulticastRtpsPduCollection](#) containers).

3 Related documentation

3.1 Input documents & related standards and norms

- [1] Data Distribution Service (DDS), Version 1.4
<http://www.omg.org/spec/DDS/1.4>
- [2] Glossary
AUTOSAR_FO_TR_Glossary
- [3] General Specification of Basic Software Modules
AUTOSAR_CP_SWS_BSWGeneral
- [4] Specification of RTE Software
AUTOSAR_CP_SWS_RTE
- [5] Specification of PDU Router
AUTOSAR_CP_SWS_PDURouter
- [6] DDS Interoperability Wire Protocol, Version 2.2
<http://www.omg.org/spec/DDSI-RTPS/2.2>
- [7] Specification of Default Error Tracer
AUTOSAR_CP_SWS_DefaultErrorTracer
- [8] Specification of Crypto Service Manager
AUTOSAR_CP_SWS_CryptoServiceManager
- [9] Specification of CRC Routines
AUTOSAR_CP_SWS_CRCLibrary
- [10] Requirements on Data Distribution Service
AUTOSAR_FO_RS_DataDistributionService
- [11] DDS Security, Version 1.1
<https://www.omg.org/spec/DDS-SECURITY/1.1>
- [12] ISO 26262:2018 (all parts) – Road vehicles – Functional Safety
<https://www.iso.org>
- [13] Extensible and Dynamic Topic Types for DDS, Version 1.2
<https://www.omg.org/spec/DDS-XTypes/1.2>
- [14] Specification of Platform Types for Classic Platform
AUTOSAR_CP_SWS_PlatformTypes

3.2 Related specification

AUTOSAR provides a General Specification on Basic Software modules [3], which is also valid for the Dds BSW.

Thus, the specification SWS BSW General shall be considered as additional and required specification for Dds.

4 Constraints and assumptions

4.1 Constraints and assumptions

4.1.1 Assumptions

- **DDS/non-DDS PDU concatenation.** Concatenating DDS PDUs and non-DDS PDUs by IpduM is out of the scope of this concept.

4.1.2 Limitations

- **DDS Dynamic Discovery [1]:** Not supported.
- **AP/CP Interoperability by means of RPC communication:** Not supported.
- **DDS/CAN Data gateway:** Not supported
- **Shared-memory communication:** Not supported.
- **Immediate transmission:** Not supported.
- **Immediate reception:** Not supported.
- **PDU Metadata:** Currently not used.
- **Dds_Transmit and Dds_TriggerTransmit:** Both APIs are always available, but only one of them must be used (e.g., Dds_TriggerTransmit is used instead of Dds_Transmit only if to be called by lower layer).
- **Software Cluster Connection Layer (SwCluC):** Not supported.
- **Multicore Distribution:** Dds module is assumed to be located and running in a single partition (no multiple sets of Tx/Rx main functions per partition).
- **Communication use cases:** Below a table summarizes the supported Communication paths.

| | |
|---|-----|
| Short name: | Y/N |
| Signal-based with Sender/Receiver interface | Yes |
| Signal-based with Client/Server interface | No |
| Service-oriented | Yes |
| Diagnostic | No |
| DLT | No |
| XCP | No |
| Mirror | No |

Table 4.1: DDS supported Communication paths

4.1.3 Constraints

- **DDS-related Transformation:** Since Dds needs to access to data and data type directly, no transformation is performed at RTE level (see [CP_SWS_Dds_CONSTR_00725]). Also no BSW module "DDS Transformer" (transformer dedicated for DDS communication stack) exists.
- **DDS-SOME/IP network interaction:** Dds and SOME/IP share the same bus type, so some mechanism to assure they don't interfere would be provided. This mechanism will mostly consist on UDP port choice: SOME/IP and DDS shall never share reception port numbers.
- **DDS-SOME/IP SoAd resource sharing:** Shall not be mix of DDS and SOME/IP (or any other potential protocol) communication on the same socket connection. A socket (or a set of sockets) is reserved for DDS only.
- **DDS/non-DDS PDU concatenation:** DDS and SOME/IP shall not share the same socket connection. A socket (or a set of sockets) shall be reserved to DDS only.
- **UDP Usage:** According to the OMG specification [1], the UDP/IP PSM shall be used for inter-ecu communications.

4.2 Applicability to car domains

This module is applicable all domains where DDS communication is required and/or beneficial.

5 Dependencies to other modules

This section describes the relations to other modules and files within the AUTOSAR basic software architecture. It contains brief descriptions of configuration information and services, which are required by the Dds module from other modules.

5.1 RTE (BSW Scheduler)

The RTE BSW Scheduler [4] calls the main functions of the Dds BSW, which are necessary for the cyclic processes of the Dds.

5.2 PDU Router

The Dds module uses the PDU Router [5] as middle layer module.

5.3 StbM

OMG Standard states that each RTPS message sent by the originating Participant can include a timestamp. ([6] 8.3.2.2). It may be used by the receiving application to estimate the time offset between the clocks of the sending and receiving Participants (for instance in DESTINATION_ORDER QoS policy handling). The `StbM_GetCurrentTime()` API shall be used to guarantee the needed precision ([6] 8.3.5.8, 9.4.2.9).

5.4 Default Error Tracer

In order to be able to report development or runtime errors, the Dds module has to have access to the error hook of the Default Error Tracer [7].

5.5 Crypto Service Manager

In order to support Security capabilities (e.g., Key management, Message Authentication Code generation and verification), the Dds shall use the Crypto Service Module API [8]: The Dds requires:

- the MAC-generate interface (*Csm_MacGenerate*) to generate MAC to be added to messages to be sent;
- the MAC-verify interface (*Csm_MacVerify*) to check MAC of received messages.

5.6 Cyclic Redundancy Check

In order to support Safety capabilities, Dds uses the CRC Library [9].

The Dds requires the *Crc_CalculateCRC32* or the *Crc_CalculateCRC64* APIs to calculate CRC to be added to messages to be sent or to be checked for received messages.

6 Requirements Tracing

The following tables reference the requirements specified in [10, RS-DDS] and links to the fulfillment of these. Please note that if column “Satisfied by” is empty for a specific requirement this means that this requirement is not fulfilled by this document.

| Requirement | Description | Satisfied by |
|-------------------|--|---|
| [FO_RS_Dds_00001] | DDS Compliance | [CP_SWS_Dds_00734] [CP_SWS_Dds_00736] [CP_SWS_Dds_00859] [CP_SWS_Dds_CONSTR_00725] |
| [FO_RS_Dds_00002] | DDS standard serialization rules | [CP_SWS_Dds_00726] |
| [FO_RS_Dds_00004] | DDS payload serialization rules | [CP_SWS_Dds_00728] [CP_SWS_Dds_00729] [CP_SWS_Dds_00730] [CP_SWS_Dds_00731] [CP_SWS_Dds_00734] [CP_SWS_Dds_00735] [CP_SWS_Dds_00736] [CP_SWS_Dds_CONSTR_00725] [CP_SWS_Dds_CONSTR_00732] [CP_SWS_Dds_CONSTR_00733] |
| [FO_RS_Dds_00005] | DDS Quality of Service | [CP_SWS_Dds_00763] [CP_SWS_Dds_00764] [CP_SWS_Dds_00773] [CP_SWS_Dds_00832] [CP_SWS_Dds_00833] [CP_SWS_Dds_01001] |
| [FO_RS_Dds_00006] | The DDS AUTOSAR components receive unserialized data | [CP_SWS_Dds_CONSTR_00725] |
| [FO_RS_Dds_00007] | Type Definition | [CP_SWS_Dds_00728] [CP_SWS_Dds_00729] [CP_SWS_Dds_00730] [CP_SWS_Dds_00731] [CP_SWS_Dds_00735] [CP_SWS_Dds_00801] [CP_SWS_Dds_00802] [CP_SWS_Dds_CONSTR_00732] [CP_SWS_Dds_CONSTR_00733] |
| [FO_RS_Dds_00008] | Customization | [CP_SWS_Dds_CONSTR_00712] |
| [FO_RS_Dds_00009] | Security mechanism | [CP_SWS_Dds_00750] [CP_SWS_Dds_00752] [CP_SWS_Dds_00753] [CP_SWS_Dds_00756] [CP_SWS_Dds_00758] [CP_SWS_Dds_00773] [CP_SWS_Dds_00832] [CP_SWS_Dds_00833] [CP_SWS_Dds_CONSTR_00743] [CP_SWS_Dds_CONSTR_00754] |
| [FO_RS_Dds_00010] | Safety mechanism | [CP_SWS_Dds_00761] [CP_SWS_Dds_00762] [CP_SWS_Dds_00763] [CP_SWS_Dds_00764] [CP_SWS_Dds_00766] [CP_SWS_Dds_00769] [CP_SWS_Dds_00773] [CP_SWS_Dds_00832] [CP_SWS_Dds_00833] |
| [FO_RS_Dds_00015] | Publish | [CP_SWS_Dds_00772] [CP_SWS_Dds_00773] [CP_SWS_Dds_00828] [CP_SWS_Dds_00829] [CP_SWS_Dds_00830] [CP_SWS_Dds_00832] [CP_SWS_Dds_00835] [CP_SWS_Dds_00837] [CP_SWS_Dds_00838] [CP_SWS_Dds_00843] [CP_SWS_Dds_00851] [CP_SWS_Dds_00852] [CP_SWS_Dds_00854] [CP_SWS_Dds_00855] [CP_SWS_Dds_00859] [CP_SWS_Dds_00871] [CP_SWS_Dds_00872] [CP_SWS_Dds_00873] [CP_SWS_Dds_00881] [CP_SWS_Dds_00882] [CP_SWS_Dds_00883] [CP_SWS_Dds_CONSTR_00865] [CP_SWS_Dds_CONSTR_00866] [CP_SWS_Dds_CONSTR_00884] |





| Requirement | Description | Satisfied by |
|-------------------|--|---|
| [FO_RS_Dds_00016] | Subscribe | [CP_SWS_Dds_00772] [CP_SWS_Dds_00773] [CP_SWS_Dds_00825] [CP_SWS_Dds_00826] [CP_SWS_Dds_00827] [CP_SWS_Dds_00832] [CP_SWS_Dds_00834] [CP_SWS_Dds_00836] [CP_SWS_Dds_00841] [CP_SWS_Dds_00861] [CP_SWS_Dds_00862] [CP_SWS_Dds_00863] [CP_SWS_Dds_00864] [CP_SWS_Dds_00873] [CP_SWS_Dds_CONSTR_00867] [CP_SWS_Dds_CONSTR_00868] |
| [FO_RS_Dds_00017] | Transport protocol | [CP_SWS_Dds_00726] |
| [FO_RS_Dds_00019] | RTPS message encapsulation | [CP_SWS_Dds_00726] [CP_SWS_Dds_00734] [CP_SWS_Dds_00736] |
| [FO_RS_Dds_00020] | RTPS message decapsulation | [CP_SWS_Dds_00726] [CP_SWS_Dds_00734] [CP_SWS_Dds_00736] |
| [SRS_BSW_00003] | All software modules shall provide version and identification information | [CP_SWS_Dds_00820] [CP_SWS_Dds_00821] [CP_SWS_Dds_00831] |
| [SRS_BSW_00101] | The Basic Software Module shall be able to initialize variables and hardware in a separate initialization function | [CP_SWS_Dds_00810] [CP_SWS_Dds_00811] [CP_SWS_Dds_00812] [CP_SWS_Dds_00813] |
| [SRS_BSW_00318] | Each AUTOSAR Basic Software Module file shall provide version numbers in the header file | [CP_SWS_Dds_00820] [CP_SWS_Dds_00831] |
| [SRS_BSW_00373] | The main processing function of each AUTOSAR Basic Software Module shall be named according the defined convention | [CP_SWS_Dds_00823] [CP_SWS_Dds_00824] |
| [SRS_BSW_00374] | All Basic Software Modules shall provide a readable module vendor identification | [CP_SWS_Dds_00820] [CP_SWS_Dds_00831] |
| [SRS_BSW_00379] | All software modules shall provide a module identifier in the header file and in the module XML description file. | [CP_SWS_Dds_00820] [CP_SWS_Dds_00831] |
| [SRS_BSW_00402] | Each module shall provide version information | [CP_SWS_Dds_00820] [CP_SWS_Dds_00831] |
| [SRS_BSW_00405] | BSW Modules shall support multiple configuration sets | [CP_SWS_Dds_00802] [CP_SWS_Dds_00810] |
| [SRS_BSW_00407] | Each BSW module shall provide a function to read out the version information of a dedicated module implementation | [CP_SWS_Dds_00820] [CP_SWS_Dds_00831] |
| [SRS_BSW_00411] | All AUTOSAR Basic Software Modules shall apply a naming rule for enabling/disabling the existence of the API | [CP_SWS_Dds_00820] [CP_SWS_Dds_00831] |
| [SRS_BSW_00414] | Init functions shall have a pointer to a configuration structure as single parameter | [CP_SWS_Dds_00810] |
| [SRS_BSW_00424] | BSW module main processing functions shall not be allowed to enter a wait state | [CP_SWS_Dds_00823] [CP_SWS_Dds_00824] |
| [SRS_BSW_00433] | Main processing functions are only allowed to be called from task bodies provided by the BSW Scheduler | [CP_SWS_Dds_00823] [CP_SWS_Dds_00824] |

Table 6.1: RequirementsTracing

7 Functional specification

7.1 Overview

The Dds module implements all the interface logic (Entity management, QoS, etc.) and the DDSI-RTPS standard layer [6] for DDS communication. It is a full-fledged middleware composed by several functional aspects:

- Serialization
- Deserialization
- Data filtering
- Data reordering
- Data persistency
- Data re-transmission
- Security
- E2E protection

From the transmission path point of view, Dds interacts with the PDU Router only offering a PDU-based interface for the incoming (e.g., **Upper layer PDUs**) and outgoing (e.g., **Lower layer PDUs**) PDUs.

Basically, at sender side, DDS Data is created in the application layer and passed to RTE directly (as unserialized data), and then forwarded to LdCom, PduR and then Dds as a PDU without any modification nor transformation (and vice versa at receiver side). RTE, LdCom and PduR (as upper-layer) act simply as pass-through modules. Serialization is performed inside the Dds BSW and it is completely opaque to the AUTOSAR stack. The Dds BSW shall know the exact data type of the copied data.

Note: no transformation nor serialization would be performed at RTE, even for composite data type: the data would be copied to the ISignal (in the LdCom buffer) from where the PduR routes the information to the DDS module, where the data arrives completely unmodified.

The Dds module is able to process the data through its **type** mapped to the PDU (see 10.2). The lower layer PDU contains the DDSI-RTPS protocol packet ready to be delivered to the transport layer.

The **transport layer** provides a set connections suitable to enable the Dds communication. For instance, let's consider a simple publishing SW-C using some Publishers/DataWriters under some DomainParticipants. If dynamic discovery is not supported on local DomainParticipant, for each DataWriter it is necessary to statically configure proper RemoteDataReader reachability information. Similar thing shall happen at the receiving side: the local DataReader shall know the information about reachability of the related Data Writer. This information shall be used to properly configure underlying

transport protocol. For details about remote configuration, refer to [DdsRemoteDomainParticipant](#).

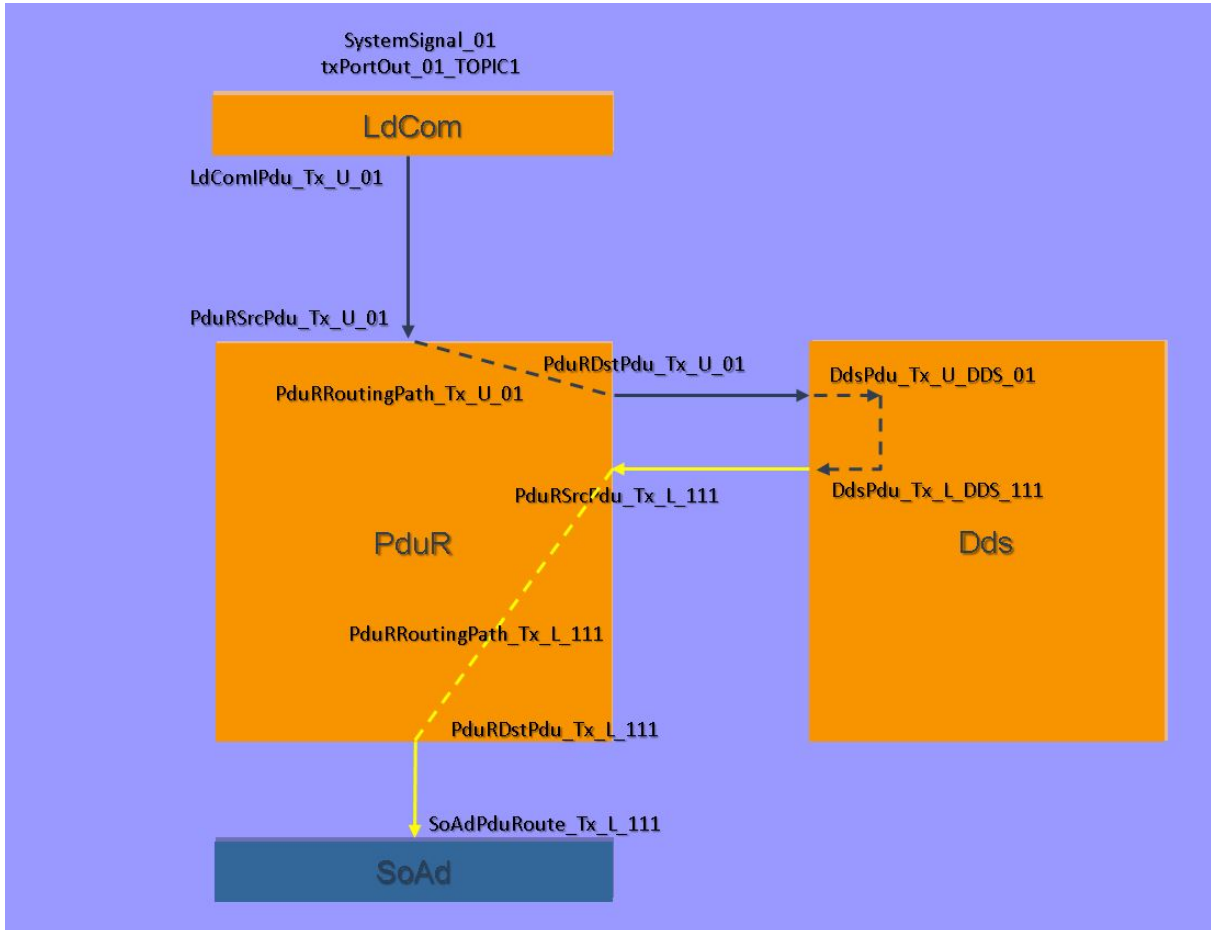


Figure 7.1: Dds full transmission path

7.1.1 QoS Management

The Dds BSW could support a subset (even empty) of QoS policies. There is no mandatory QoS to be implemented. It is vendor-specific which QoS policy is actually supported.

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Each entity could define its own set of supported QoS policy, by static configuration.

7.1.1.1 TRANSPORT_PRIORITY QoS mapping

The DDS standard defines the TRANSPORT_PRIORITY QoS for a certain DataWriter. Its purpose is to allow the application to take advantage of transports capable of sending messages with different priorities (any value within the range of a 32-bit signed

integer may be chosen; higher values indicate higher priority). In AUTOSAR CP the information closest to the concept of transport priority is the value of **SoAdSocketFramePriority** defined in **SoAdSocketConnectionGroup** parent object of the **SoAd** module. This specifies the priority of the Ethernet frame handled for all the **SoAdSocketConnections** owned by the related **SoAdConnectionGroup**.

Unfortunately there is no direct link between the application level of the Dds module (e.g., the upper layer PDU and the DdsDataWriter) and its transport level (e.g., the lower layer PDU).

In other words: the Dds module selects at runtime the lower layer PDU based on the configuration of the according *DdsDataWriter*. If any, the Dds module should select a *DdsRtpsDataTxPdu* that belongs to a **SoAdSocketConnectionGroup** configured with the needed **SoAdSocketFramePriority**.

Note: the TRANSPORT_PRIORITY QoS is considered just an hint for the underlying transport protocol. The policy depends on the ability of the underlying transports to set a priority on the messages they send.

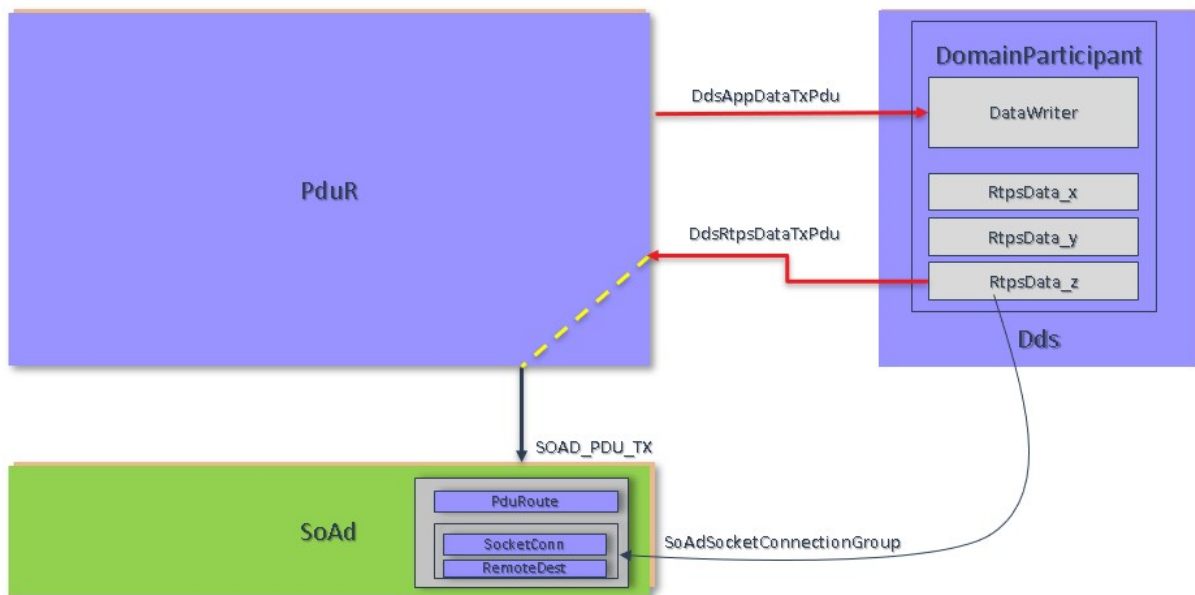


Figure 7.2: DataWriter Transport priority QoS value

7.1.2 Security Mechanisms

Opening up a communication path between AP and CP, and even between CP and non-AUTOSAR platforms, could involve security risks, so it may require the usage of some security mechanisms.

The Dds BSW Module guarantees some security mechanism by the usage of DDS Security Specification [11]. The usage of this specification is necessary to guarantee the interoperability with other DDS systems, both with AP (where DDS- Security is already

in use) and in non-AUTOSAR systems. Implementing this specification, however, could be really resource consuming. In particular, to be used on a slow microcontroller, these features would need hardware acceleration. To overcome this issue, a subset of DDS-security functionalities which guarantee a minimum security level has been selected.

At this stage, implementing DDS-Security aims to guarantee message authentication, data integrity and group authentication. Security mechanism can be enabled or disabled at configuration time. If enabled, all security parameters must be statically configured at pre-compile time. For details on security parameters configuration, please refer to [subparagraph 10.2.3.3.1.4](#).

If configured, a Message Authentication Code (MAC) of the entire RTPS message is added. The AUTOSAR CSM is used for key management and MAC calculation. Which algorithm to be used is configurable (choosing from supported ones).

The keys used for hash algorithms are symmetric keys shared between entities associated to a DomainParticipant, so authentication is done at DomainParticipant level (not of single Publisher/Subscriber, not of single DataWriter/DataReader). The symmetric key to be used for a specific DomainParticipant shall be managed directly by CSM, which should provide a handle to DDS to use its services.

For the above mentioned purposes, the DDS **Cryptographic Plugin** is used, which offers an interface to protect the whole RTPS message. The resulting RTPS message, after security is applied, is shown in the picture [Figure 7.3](#) below.

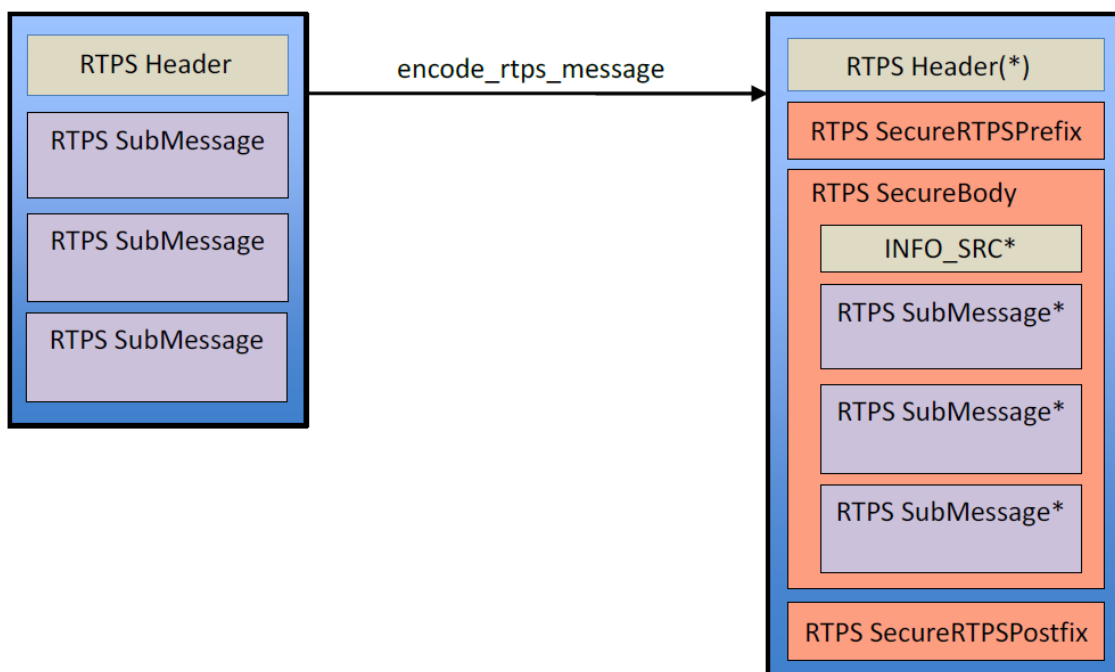


Figure 7.3: Dds RTPS message encoding

7.1.3 Safety Mechanisms

According to ISO 26262, there is a set of faults that can be considered on communication link between senders and receivers executed in different software partitions or ECUs.

The concept of end-to-end protection assumes that safety-related data exchange shall be protected at runtime against the effects of faults within the communication link.

The DDS Specification has intrinsic safety mechanisms (Counters, CRCs, QoS policies) that can be used to support a safety argument.

The following is a list of possible faults, as defined in [12], to be addressed in the pursuit of functional safety, and the mechanisms DDS offers to support them:

- **Repetition, loss, insertion, incorrect sequence, information from a sender received by only a subset of receivers, and blocking access to a communication channel:** submessage 64-bit sequence number, as defined in [6] section 8.3.5.4 "SequenceNumber", and additional SequenceNumber-typed fields in section 8.3.7 "RTPS Submessages". Those mechanisms can be useful only to detect losses at receiver side; if detection is required also to sender side, the RELIABILITY DDS QoS (defined in [1], section 2.2.3.14 "RELIABILITY") shall be used in conjunction.
- **Delay of information and blocking access to a communication channel:** LATENCY_BUDGET, DEADLINE and LIFESPAN Quality of Service policies, as defined respectively in [1], 2.2.3.8 "LATENCY_BUDGET", 2.2.3.7 "DEADLINE" and 2.2.3.16 "LIFESPAN" sections.
- **Masquerade or incorrect addressing of information:** DDS Security authentication plugin, as defined in [11] section 8.3 "Authentication Plugin". In this concept, only Authentication at DomainParticipant level could be achieved, since all entities belonging to the same DomainParticipant level share the same symmetric key. This prevent entities external to DomainParticipant to have access to the DomainParticipant communication, but it does prevent to distinguish 2 different entities that are authorized to communicate inside the DomainParticipant.
- **Corruption of information, asymmetric information sent from a sender to multiple receivers (effective only for resulting invalid CRC):** rtpsMessageChecksum under HeaderExtension submessage ([RTPS 2.5 or higher]). In absence of this feature, [11] also provides message integrity verification built into its message authentication protocol. For CRC calculation, the AUTOSAR CRC library is used.
- **Notification of these fault conditions errors:** In case of any communication errors or faults (even timeout errors), the Dds BSW should notify the Det module. Specific safety-related error codes are detailed into [subsection 7.2.3](#)

7.2 General Requirements

Inside the same DDS Domain Participant, topic names shall be unique according to [1].

[CP_SWS_Dds_CONSTR_00712]{DRAFT} Topic name uniqueness [During validation of the configuration, a validation error shall be raised if different `DdsTopics` belonging to the same `DdsDomainParticipant` share the same name.] (*FO_RS_Dds_00008*)

7.2.1 Communication requirements

7.2.1.1 Serialization requirements

During transmission, the Dds BSW module receives data produced by an upper layer module as `DdsAppDataTxPdu`. The upper layer module forwards raw data (e.g. byte stream) to the Dds BSW module, i.e. no data serialization or data transformation is performed before the Dds BSW Module is invoked. The Dds BSW knows the exact data type of the received data, by means of the `ImplementationDataType`, and it performs a cast from raw data to `ImplementationDataType`, in order to have structured data. By using this structured data, the DDS performs its own processing, serializes resulting data into an RTPS packet and then saves the final RTPS packet into the lower PDU to be forwarded to the PduR.

[CP_SWS_Dds_CONSTR_00725]{DRAFT} No data serialization [The validation of the Dds configuration shall consider other transformer configuration. Any `ISignal` that is mapped at the same time to a `DdsTopic` and to a transformer shall be rejected and considered as invalid.] (*FO_RS_Dds_00001, FO_RS_Dds_00004, FO_RS_Dds_00006*)

The Dds BSW module serializes a given `DdsAppDataTxPdu` to an DDS Wire Interoperability protocol message ([6]). The DDS serialized `DdsAppDataTxPdu` is provided into a `DdsRtpsDataTxPdu` or `DdsRtpsMulticastDataTxPdu`. Thereby the DDS middleware internal policies decide which target PDU is used.

[CP_SWS_Dds_00734]{DRAFT} DDS Data serialization [The Dds BSW shall perform the serialization of a `DdsAppDataTxPdu` into a `DdsRtpsDataTxPdu` or a `DdsRtpsMulticastDataTxPdu`. The PDU, which is used by the `DdsDataWriter` (either `DdsRtpsDataTxPdu` or `DdsRtpsMulticastDataTxPdu`), shall be selected at runtime according to the DDS middleware internal policies.] (*FO_RS_Dds_00001, FO_RS_Dds_00004, FO_RS_Dds_00019, FO_RS_Dds_00020*)

[CP_SWS_Dds_00726]{DRAFT} DDS-RTPS compliance [Data produced into a `DdsRtpsDataTxPdu` or into a `DdsRtpsMulticastDataTxPdu` shall be compliant with the DDS Wire Interoperability protocol (RTPS) defined in [6]. To guarantee such compliance, the Dds BSW module shall serialize the payload according to the DDS standard serialization rules defined in section 7.4.3.5 of above mentioned doc-

ument ([13]).] ([FO_RS_Dds_00002](#), [FO_RS_Dds_00017](#), [FO_RS_Dds_00019](#), [FO_RS_Dds_00020](#))

[CP_SWS_Dds_00728]{DRAFT} DDS serialization of primitive types [The Dds BSW module shall serialize AUTOSAR primitive data types according to the standard serialization rules for the equivalent DDS PRIMITIVE_TYPE defined in section 7.2.2.2 of [13].] ([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

Table 7.1 provides the equivalent DDS PRIMITIVE_TYPEs for the primitive AUTOSAR CP platform data types. For AUTOSAR CP platform data types, please refer to [14], chapter 8.2

| Type | DDS Type | Remark |
|--------------|----------|--------|
| boolean | Boolean | |
| uint8 | Byte | |
| uint16 | UInt16 | |
| uint32 | UInt32 | |
| uint64 | UInt64 | |
| sint8 | Byte | |
| sint16 | Int16 | |
| sint32 | Int32 | |
| sint64 | Int64 | |
| uint8_least | Byte | |
| uint16_least | UInt16 | |
| uint32_least | UInt32 | |
| sint8_least | Byte | |
| sint16_least | Int16 | |
| sint32_least | Int32 | |
| float32 | Float32 | |
| float64 | Float64 | |

Table 7.1: Serialization of primitive AUTOSAR CP platform data types

[CP_SWS_Dds_00729]{DRAFT} DDS serialization of enumeration data types [The Dds BSW module shall serialize ImplementationDataType of category ENUMERATION (refer to chapter 5.5.4 of [4]) according to the standard serialization rules for DDS ENUM_TYPE defined in section 7.2.2.4.1.1 of [13].] ([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

[CP_SWS_Dds_00730]{DRAFT} DDS serialization of ARRAY data type [The Dds BSW module shall serialize ImplementationDataType of category ARRAY (refer to chapter 5.3.4.4 of [4]) according to the standard serialization rules for DDS ARRAY_TYPE defined in section 7.2.2.4.3 of [13].] ([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

[CP_SWS_Dds_00731]{DRAFT} DDS serialization of STRUCTURE data type [The Dds BSW module shall serialize ImplementationDataType of category STRUCTURE (refer to chapter 7.2.2.4.4.1 of [4]) according to the standard serialization rules for DDS STRUCT_TYPE defined in section 7.4.3.5 of [13]. The Dds BSW module shall mark as optional all optional members of the structure (refer to section 7.2.2.4.4.5 of [13].)] ([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

[CP_SWS_Dds CONSTR_00732]{DRAFT} DDS serialization of UNION data type [ImplementationDataType of category UNION (refer to chapter 7.2.2.4.4.2 of [4]) are not managed by the Dds BSW.

The Dds BSW configuration validation shall fail in case a DdsTopic links an ImplementationDataType which contains a union.]([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

[CP_SWS_Dds CONSTR_00733]{DRAFT} DDS serialization of POINTER data type [ImplementationDataType of category POINTER (refer to chapter 7.2.2.4.6 of [4]) are not managed by the Dds BSW.

The Dds BSW configuration validation shall fail in case a DdsTopic links an ImplementationDataType which contains a pointer.]([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

[CP_SWS_Dds_00735]{DRAFT} Encoding Format and Endianness of Strings in DDS [The Dds BSW module shall encode Strings according to Section 7.4.1.1.2 of [13].]([FO_RS_Dds_00004](#), [FO_RS_Dds_00007](#))

7.2.1.2 Deserialization requirements

On reception side, the lower layer module forwards DDS data, serialized into a RTPS packet, to the Dds BSW module. The Dds BSW module receives DDS serialized data from the lower layer module as [DdsRtpsDataRxPdu](#) or [DdsRtpsMulticastDataRxPdu](#). The Dds BSW module constructs the structured data, by means of the configured ImplementationDataType, performs its own processing, and then it saves raw data into the upper layer PDU to be sent to upper modules.

[CP_SWS_Dds_00736]{DRAFT} DDS Data deserialization [

On receiving side, the Dds BSW module shall deserialize a given [DdsRtpsDataRxPdu](#) according the DDS Wire Interoperability protocol ([6]) to an AUTOSAR compliant PDU. The DDS deserialized [DdsRtpsDataRxPdu](#) or [DdsRtpsMulticastDataRxPdu](#) is then provided as [DdsAppDataRxPdu](#) to upper layers.]([FO_RS_Dds_00001](#), [FO_RS_Dds_00004](#), [FO_RS_Dds_00019](#), [FO_RS_Dds_00020](#))

7.2.1.3 Transmission Queue management

The Dds module shall provide a Dds_Transmit function so that the PDU Router is able to initiate the transmission of a upper layer [DdsAppDataTxPdu](#). When called, the Dds_Transmit function saves the received PDU into the queue and then returns.

For Dds_Transmit API specific requirements refer to the specific API [subsection 8.3.3](#).

[CP_SWS_Dds_00851]{DRAFT} Internal transmission queues [The Dds module shall manage an internal set of queues where incoming transmission upper layer PDUs shall be stored.]([FO_RS_Dds_00015](#))

Note: The properties of the queue are configurable by `DdsTxQueueSize` and `DdsTxQueueUnicastPduRef/DdsTxQueueMulticastPduRef`.

[CP_SWS_Dds_00828]{DRAFT} Tx queues set processing order [The Transmission function (e.g., `Dds_MainFunction_Tx()`) shall establish the tx queues processing order based on the queue specific period. If some queue has the same period value, their mutual order is not defined.]([FO_RS_Dds_00015](#))

[CP_SWS_Dds_00838]{DRAFT} Tx queue processing rules [For each queue the Transmission function shall perform all the DDS Middleware processing (QoS management, safety and security tasks, se-rialization) on received data, according to the configured processing algorithm.]([FO_RS_Dds_00015](#))

The transmission queue shall have its own processing period. The queue specific period shall be a multiple of the `DdsTxMainFunctionPeriod`.

[CP_SWS_Dds_00837]{DRAFT} Tx queue processing algorithm [The order of the queue processing shall depend by the configured `DdsQueueAlgorithm`:

- **FIFO:** the oldest received transmission upper layer PDU present in queue shall be processed first
- **LIFO:** the latest received transmission upper layer PDU present in queue shall be processed first
- **VENDOR_SPECIFIC:** the order of processing is not specified

]([FO_RS_Dds_00015](#))

7.2.1.4 Transmission requirements

The `Dds` module shall provide a `Dds_MainFunction_Tx()` function to perform the actual DDS Middleware processing (and subsequent PDU transmission). For `Dds_MainFunction_Tx()` specific requirements refer to the specific [subsection 8.5.2](#).

DDSI-RTPS [6] supports both UDP unicast and UDP multicast when sending RTPS messages. Also, they aren't mutually exclusive: just one or both can be used in the same domain according to the system's communications design constraints (network architecture, performance, safety, security, etc.). To support both unicast and multicast address, the `SoAd` shall be properly configured.

[CP_SWS_Dds_CONSTR_00865]{DRAFT} Unicast transmission [During validation of the configuration, a validation error shall be raised if a `DdsRtpsDataTxPdu` belongs to a `SoAdSocketConnection` configured with a multicast `SoAdSocketRemotelpAddress`.]([FO_RS_Dds_00015](#))

[CP_SWS_Dds_CONSTR_00866]{DRAFT} Multicast transmission [During validation of the configuration, a validation error shall be raised if a `DdsRtpsMulticastDataTxPdu` belongs to a `SoAdSocketConnection` configured with a unicast `SoAdSocketRemotelpAddress`.]([FO_RS_Dds_00015](#))

7.2.1.5 Reception Queue management

[CP_SWS_Dds_00864]{DRAFT} Internal reception queues [The Dds module shall manage an internal set of queues where incoming reception lower layer PDUs shall be stored.] ([FO_RS_Dds_00016](#))

Note: The properties of the queue are configurable by DdsRxQueueSize and DdsRxQueueUnicastPduRef/DdsRxQueueMulticastPduRef

[CP_SWS_Dds_00825]{DRAFT} Rx queues set processing order [The reception function (e.g., Dds_MainFunction_Rx) shall establish the Rx queues processing order based on the queue period. If some queue has the same DdsRxQueuePeriod value, their mutual order is not defined.] ([FO_RS_Dds_00016](#))

[CP_SWS_Dds_00834]{DRAFT} Rx queue processing rules [For each queue the reception function shall perform all the DDS Middleware operations (QoS management, safety and security tasks, de-serialization) on received data, according to the configured processing algorithm.] ([FO_RS_Dds_00016](#))

The reception queue shall have its own processing period. The queue specific period shall be a multiple of the DdsRxMainFunctionPeriod.

[CP_SWS_Dds_00836]{DRAFT} Rx queue processing algorithm [The order of the queue processing shall depend by the configured algorithm:

- **FIFO:** the oldest received lower layer PDU present in queue shall be processed first
- **LIFO:** the latest received lower layer PDU present in queue shall be processed first
- **VENDOR_SPECIFIC:** the order of processing is not specified

] ([FO_RS_Dds_00016](#))

7.2.1.6 Reception requirements

Every reception lower layer PDU which is received by the Ethernet Interface is given to the PDU Router by means of the SoAd. The PDU Router routes those PDUs to the Dds reception interface invoking the Dds_RxIndication callback.

For Dds_RxIndication API specific requirements refer to the specific API [subsection 8.4.1](#).

Similar to transmission, DDSI-RTPS [6] supports both UDP unicast and UDP multicast also when receiving RTPS messages. Also, they aren't mutually exclusive: just one or both can be used in the same domain according to the system's communications design constraints (network architecture, performance, safety, security, etc.).

To support both unicast and multicast address, the SoAd shall be properly configured.

[CP_SWS_Dds_CONSTR_00867]{DRAFT} Unicast reception [During validation of the configuration, a validation error shall be raised if a [DdsRtpsDataRxPdu](#) belongs to a **SoAdSocketConnectionGroup** configured with a multicast **SoAdSocketLocalAddressRef.**]([FO_RS_Dds_00016](#))

[CP_SWS_Dds_CONSTR_00868]{DRAFT} Multicast reception [During validation of the configuration, a validation error shall be raised if a [DdsRtpsMulticastDataRxPdu](#) belongs to a **SoAdSocketConnectionGroup** configured with a unicast **SoAdSocketLocalAddressRef.**]([FO_RS_Dds_00016](#))

7.2.1.7 Timing requirements

[CP_SWS_Dds_00873]{DRAFT} Processing timestamp [If needed, the DDS middleware shall obtain the timestamp by invoking the **StbM_GetCurrentTime()** API.]([FO_RS_Dds_00015](#), [FO_RS_Dds_00016](#))

[CP_SWS_Dds_00859]{DRAFT} RTPS Timestamp [The Timestamp needed for the RTPS packet shall be provided by the **StbM_GetCurrentTime()** **StbM** API.]([FO_RS_Dds_00001](#), [FO_RS_Dds_00015](#))

Note: The AUTOSAR Dds module is not responsible to time stamp received or transmitted PDUs. The responsibility is bound to the DDS middleware.

7.2.2 Security requirements

[CP_SWS_Dds_00750]{DRAFT} DDS-security [In order to be compliant and to inter-communicate with other DDS systems, the Dds BSW module shall implement security mechanisms by using DDS-Security Specification [11].]([FO_RS_Dds_00009](#))

[CP_SWS_Dds_00752]{DRAFT} MAC usage [The Dds BSW module shall guarantee data-integrity and message authentication at DomainParticipant level by adding a Message Authentication Code (MAC) to the message to be sent, calculated by using symmetric key algorithms. The resulting message shall still be DDSI-RTPS compliant.]([FO_RS_Dds_00009](#))

[CP_SWS_Dds_00753]{DRAFT} CSM library usage [The Dds BSW shall configure, for each DomainParticipant, one reference to each CSM job needed: one job to calculate MAC (**DdsDomainParticipantCsmAuthenticateJob**) and one to check MAC of received messages (**DdsDomainParticipantCsmVerifyJob**). For configuration details, refer to [DdsDomainParticipantCryptoInfo](#). At sender side, the Dds BSW shall add the resulting MAC of **DdsDomainParticipantCsmAuthenticateJob** to each message of this DomainParticipant. At receiving side, the Dds BSW shall check the result of the **DdsDomainParticipantCsmVerifyJob**.]([FO_RS_Dds_00009](#))

[CP_SWS_Dds_CONSTR_00754]{DRAFT} CSM job configuration [The CSM **DdsDomainParticipantCsmAuthenticateJob** shall be configured to

call `Csm_MacGenerate` and the `DdsDomainParticipantCsmVerifyJob` to call `Csm_MacVerify`.

The Dds BSW configuration validation shall fail in case the `DdsDomainParticipantCsmAuthenticateJob/DdsDomainParticipantCsmVerifyJob` related to the same `DdsDomainParticipant` link CSM jobs that are not configured with `Csm_MacGenerate` and `Csm_MacVerify` respectively.

For configuration details, refer to `DdsDomainParticipantCryptoInfo.](FO_RS_Dds_00009)`

[CP_SWS_Dds_CONSTR_00743]{DRAFT} CSM key configuration [Each CSM authenticate/verify pair, related to a single `DomainParticipant`, shall use the same keys (only symmetric-key algorithms are supported). For each `DomainParticipant`, the CSM used jobs shall be configured with the same keys.

The Dds BSW configuration validation shall fail in case the `DdsDomainParticipantCsmAuthenticateJob/DdsDomainParticipantCsmVerifyJob` related to the same `DdsDomainParticipant` link CSM jobs that are not configured with the same key.

For configuration details, refer to `DdsDomainParticipantCryptoInfo.](FO_RS_Dds_00009)`

[CP_SWS_Dds_00756]{DRAFT} MAC calculation failure [If the MAC calculation fails (e.g., the `Csm_MacGenerate()` or `Csm_MacVerify()` return any error), the Dds BSW module shall call the API `Det_ReportRuntimeError()` with the `DDS_E_CSM_LIBRARY_ERROR` runtime error code and discard the message to be sent.

In this case, during transmission the Dds BSW shall call the `PduR_DdsTxConfirmation` function with result = `E_NOT_OK.](FO_RS_Dds_00009)`

[CP_SWS_Dds_00758]{DRAFT} MAC check failure [At receiving side, if the MAC check fails, the Dds BSW module shall call the API `Det_ReportRuntimeError()` with the `DDS_E_CSM_CHECK_FAILED` runtime error code and discard the message.](FO_RS_Dds_00009)

7.2.3 Safety requirements

[CP_SWS_Dds_00761]{DRAFT} Repetition or Insertion of Information [The Dds BSW module shall use submessages which have counters, e.g., `AckNack`, `Data` and `DataFrag`, etc., to guarantee safety mechanisms against Repetition or Insertion of Information faults. At receiving side, if a message with a duplicated counter is received, the Dds BSW module shall discard the message and call the API `Det_ReportRuntimeError()` with the `DDS_E_SAMPLE_REJECTED` runtime error code.](FO_RS_Dds_00010)

[CP_SWS_Dds_00762]{DRAFT} Loss or Incorrect sequence of Information [The Dds BSW module shall use submessages which have counters, e.g., `AckNack`, `Data`

and DataFrag, etc., to guarantee safety mechanisms against Loss or Incorrect sequence of Information faults. At receiving side, if a message with a non-consecutive counter is received, the Dds BSW module shall discard the message and call the API `Det_ReportRuntimeError()` with the `DDS_E_SAMPLE_LOST` runtime error code.] ([FO_RS_Dds_00010](#))

The Dds BSW module shall use QoSs able to monitor timeouts, such as `DEADLINE`, `LATENCY_BUDGET`, `LIFESPAN` and `TIME_BASED_FILTER` (refer respectively to [DdsDeadline](#), [DdsLatencyBudget](#), [DdsLifespan](#) and [DdsTimeBasedFilter](#)) to guarantee safety mechanisms against Delay of Information fault (take [1] for details on those QoS policies).

[CP_SWS_Dds_00763]{DRAFT} Delay of Information - sending checks [At sending side, if some timing constraint is not fulfilled, the Dds BSW module shall discard the message and call the API `Det_ReportRuntimeError()` with the `DDS_E_SENDER_TIMING_MISSED` runtime error code.] ([FO_RS_Dds_00005](#), [FO_RS_Dds_00010](#))

[CP_SWS_Dds_00764]{DRAFT} Delay of Information - receiving checks [At receiving side, if some timing constraint is not fulfilled, the Dds BSW module shall discard the message and call the API `Det_ReportRuntimeError()` with the `DDS_E_RECEIVER_TIMING_MISSED` runtime error code.] ([FO_RS_Dds_00005](#), [FO_RS_Dds_00010](#))

[CP_SWS_Dds_00766]{DRAFT} Corruption of Information [The Dds BSW module shall use CRC check to guarantee safety mechanisms against Corruption of Information fault.] ([FO_RS_Dds_00010](#))

[CP_SWS_Dds_00769]{DRAFT} CRC check failure [On received side, if the CRC check fails, the Dds BSW module shall call the API `Det_ReportRuntimeError()` with the `DDS_E_CRC_CHECK_FAILED` runtime error code and discard the message.] ([FO_RS_Dds_00010](#))

7.3 Error Classification

Section 7.2 "Error Handling" of the document "General Specification of Basic Software Modules" [3] describes the error handling of the Basic Software in detail. Above all, it constitutes a classification scheme consisting of five error types which may occur in BSW modules.

Based on this foundation, the following section specifies particular errors arranged in the respective subsections below.

7.3.1 Development Errors

[CP_SWS_Dds_00772]{DRAFT} Definiton of development errors in module Dds [

| Type of error | Related error code | Error value |
|---|-----------------------|-------------|
| Module not initialized | DDS_E_UNINIT | 0x00 |
| Null pointer has been passed as an argument | DDS_E_PARAM_POINTER | 0x02 |
| Invalid Upper Layer Pduld | DDS_E_U_PDUID_INVALID | 0x03 |
| Invalid Lower Layer Pduld | DDS_E_L_PDUID_INVALID | 0x04 |

]([FO_RS_Dds_00015](#), [FO_RS_Dds_00016](#))

7.3.2 Runtime Errors

[CP_SWS_Dds_00773]{DRAFT} Definiton of runtime errors in module Dds [

| Type of error | Related error code | Error value |
|--|------------------------------|-------------|
| Upper layer module request rejected | DDS_E_U_PDUID_REJECTED | 0x10 |
| Lower layer notify ignored | DDS_E_L_PDUID_IGNORED | 0x11 |
| CSM library error | DDS_E_CSM_LIBRARY_ERROR | 0x30 |
| CSM check error | DDS_E_CSM_CHECK_FAILED | 0x40 |
| CRC check failed | DDS_E_CRC_CHECK_FAILED | 0x41 |
| Sample rejected | DDS_E_SAMPLE_REJECTED | 0x42 |
| Sample lost | DDS_E_SAMPLE_LOST | 0x43 |
| Timing constraints missed at receiver side | DDS_E_RECEIVER_TIMING_MISSED | 0x44 |
| Timing constraints missed at sender side | DDS_E_SENDER_TIMING_MISSED | 0x45 |
| Internal error | DDS_INTERNAL_ERROR | 0x46 |

]([FO_RS_Dds_00005](#), [FO_RS_Dds_00009](#), [FO_RS_Dds_00010](#), [FO_RS_Dds_00015](#), [FO_RS_Dds_00016](#))

7.3.3 Production Errors

There are no production errors.

7.3.4 Extended Production Errors

There are no extended production errors.

8 API specification

8.1 Imported types

In this chapter all types included from the following files are listed.

[CP_SWS_Dds_00801]{DRAFT} Definition of imported datatypes of module Dds

[

| <i>Module</i> | <i>Header File</i> | <i>Imported Type</i> |
|----------------|--------------------|-------------------------------|
| ComStack_Types | ComStack_Types.h | PduIdType |
| | ComStack_Types.h | PduInfoType |
| | ComStack_Types.h | PduLengthType |
| Csm | Rte_Csm_Type.h | Crypto_OperationModeType |
| | Rte_Csm_Type.h | Crypto_VerifyResultType |
| StbM | Rte_StbM_Type.h | StbM_SynchronizedTimeBaseType |
| | Rte_StbM_Type.h | StbM_TimeBaseStatusType |
| | Rte_StbM_Type.h | StbM_TimeStampType |
| | Rte_StbM_Type.h | StbM_TimeTupleType |
| | Rte_StbM_Type.h | StbM_UserDataType |
| | StbM.h | StbM_VirtualLocalTimeType |
| Std | Std_Types.h | Std_ReturnType |
| | Std_Types.h | Std_VersionInfoType |

]([FO_RS_Dds_00007](#))

8.2 Type definitions

8.2.1 Dds_ConfigType

[CP_SWS_Dds_00802]{DRAFT} Definition of datatype Dds_ConfigType [

| | | |
|----------------------|---|---|
| Name | Dds_ConfigType (draft) | |
| Kind | Structure | |
| Elements | implementation specific | |
| | Type | – |
| | Comment | The content of the initialization data structure is implementation specific |
| Description | This is the type of the data structure containing the initialization data for Dds. Tags: atp.Status=draft | |
| Available via | Dds.h | |

]([FO_RS_Dds_00007](#), [SRS_BSW_00405](#))

8.3 Function definitions

This is a list of functions provided for upper layer modules.

8.3.1 Dds_Init

[CP_SWS_Dds_00810]{DRAFT} Definition of API function Dds_Init [

| | | |
|---------------------------|--|---|
| Service Name | Dds_Init (draft) | |
| Syntax | <pre>void Dds_Init (const Dds_ConfigType* Dds_ConfigPtr)</pre> | |
| Service ID [hex] | 0x00 | |
| Sync/Async | Synchronous | |
| Reentrancy | Non Reentrant | |
| Parameters (in) | Dds_ConfigPtr | Pointer to a selected configuration structure |
| Parameters (inout) | None | |
| Parameters (out) | None | |
| Return value | None | |
| Description | This service initializes interfaces and variables of the AUTOSAR Dds layer. Tags: atp.Status=draft | |
| Available via | Dds.h | |

]([SRS_BSW_00405](#), [SRS_BSW_00101](#), [SRS_BSW_00414](#))

[CP_SWS_Dds_00811]{DRAFT} **Dds_Init behaviour** [The function Dds_Init shall initialize all module-related variables and constants according to the configuration.] ([SRS_BSW_00101](#))

[CP_SWS_Dds_00812]{DRAFT} **Dds_Init - Entity state** [The function Dds_Init shall initialize all Entities to "enabled" state.] ([SRS_BSW_00101](#))

[CP_SWS_Dds_00813]{DRAFT} **Dds_Init - Queue state** [The function Dds_Init shall empty all internal queues.] ([SRS_BSW_00101](#))

8.3.2 Dds_GetVersionInfo

[CP_SWS_Dds_00820]{DRAFT} Definition of API function Dds_GetVersionInfo [

| | | |
|-------------------------|---|--|
| Service Name | Dds_GetVersionInfo (draft) | |
| Syntax | <pre>void Dds_GetVersionInfo (Std_VersionInfoType* versioninfo)</pre> | |
| Service ID [hex] | 0x01 | |
| Sync/Async | Synchronous | |
| Reentrancy | Reentrant | |





| | | |
|---------------------------|--|---|
| Parameters (in) | None | |
| Parameters (inout) | None | |
| Parameters (out) | versioninfo | Pointer to where to store the version information of this module. |
| Return value | None | |
| Description | Returns the version information of this module. Tags: atp.Status=draft | |
| Available via | Dds.h | |

]([SRS_BSW_00402](#), [SRS_BSW_00407](#), [SRS_BSW_00411](#), [SRS_BSW_00374](#), [SRS_BSW_00379](#), [SRS_BSW_00003](#), [SRS_BSW_00318](#))

[CP_SWS_Dds_00821]{DRAFT} Dds_GetVersion - Null VersionInfoPtr [If development error detection for the Dds module is enabled, then the function Dds_GetVersionInfo shall check whether the parameter VersionInfoPtr is a NULL pointer (NULL_PTR). If VersionInfoPtr is a NULL pointer, then the function Dds_GetVersionInfo shall raise the development error DDS_E_PARAM_POINTER.] ([SRS_BSW_00003](#))

8.3.3 Dds_Transmit

[CP_SWS_Dds_00831]{DRAFT} Definition of API function Dds_Transmit [

| | | |
|---------------------------|---|--|
| Service Name | Dds_Transmit (draft) | |
| Syntax | Std_ReturnType Dds_Transmit (PduIdType TxPduId, const PduInfoType* PduInfoPtr) | |
| Service ID [hex] | 0x02 | |
| Sync/Async | Synchronous | |
| Reentrancy | Reentrant for different Pdulds. Non reentrant for the same Pduld. | |
| Parameters (in) | TxPdulId | Identifier of the PDU to be transmitted |
| | PduInfoPtr | Length of and pointer to the PDU data and pointer to MetaData. |
| Parameters (inout) | None | |
| Parameters (out) | None | |
| Return value | Std_ReturnType | E_OK: Transmit request has been accepted. E_NOT_OK: Transmit request has not been accepted. |
| Description | Request for transmitting a message. Tags: atp.Status=draft | |
| Available via | Dds.h | |

]([SRS_BSW_00402](#), [SRS_BSW_00407](#), [SRS_BSW_00411](#), [SRS_BSW_00374](#), [SRS_BSW_00379](#), [SRS_BSW_00003](#), [SRS_BSW_00318](#))

[CP_SWS_Dds_00852]{DRAFT} Dds_Transmit - Error conditions [The function Dds_Transmit shall call the Det_ReportError, if development error detection is enabled and if function call has failed because of the following reasons:

- Dds module is not initialized (DDS_E_UNINIT)

- PduInfoPtr equals NULL_PTR (DDS_E_PARAM_POINTER).
- Invalid upper layer TxPduId (DDS_E_U_PDUID_INVALID).

](FO_RS_Dds_00015)

[CP_SWS_Dds_00854]{DRAFT} Dds_Transmit - DDS_E_U_PDUID_REJECTED [If upper layer module transmission request cannot be accepted or the proper transmission queue is full, Dds_Transmit shall call the API Det_ReportRuntimeError with the runtime error code DDS_E_U_PDUID_REJECTED and then return E_NOT_OK.

](FO_RS_Dds_00015)

[CP_SWS_Dds_00855]{DRAFT} Dds_Transmit - E_OK [If upper layer module transmission request can be accepted, Dds_Transmit shall store the transmission upper layer PDU into the proper transmission queue, update the queue offset which indicates where to store new PDUs and return E_OK.](FO_RS_Dds_00015)

8.4 Callback notifications

This is a list of functions provided for other modules.

8.4.1 Dds_RxIndication

[CP_SWS_Dds_00841]{DRAFT} Definition of callback function Dds_RxIndication

[

| | | |
|---------------------------|---|---|
| Service Name | Dds_RxIndication (draft) | |
| Syntax | <pre>void Dds_RxIndication (PduIdType RxPduId, const PduInfoType* PduInfoPtr)</pre> | |
| Service ID [hex] | 0x42 | |
| Sync/Async | Synchronous | |
| Reentrancy | Reentrant for different PduIds. Non reentrant for the same PduId. | |
| Parameters (in) | RxPduId | ID of the received PDU. |
| | PduInfoPtr | Contains the length (SduLength) of the received PDU, a pointer to a buffer (SduDataPtr) containing the PDU, and the MetaData related to this PDU. |
| Parameters (inout) | None | |
| Parameters (out) | None | |
| Return value | None | |
| Description | Indication of a received PDU from the PDU Router interface module. Tags: atp.Status=draft | |
| Available via | Dds.h | |

](FO_RS_Dds_00016)

[CP_SWS_Dds_00861]{DRAFT} Dds_RxIndication - Error conditions [The function Dds_RxIndication shall call the Det_ReportError, if development error detection is enabled and if function call has failed because of the following reasons:

- Dds module is not initialized (DDS_E_UNINIT)
- PduInfoPtr equals NULL_PTR (DDS_E_PARAM_POINTER).
- Invalid lower layer RxPduId (DDS_E_L_PDUID_INVALID).

]([FO_RS_Dds_00016](#))

[CP_SWS_Dds_00862]{DRAFT} Dds_RxIndication - DDS_E_L_PDUID_IGNORED [If the reception lower layer PDU cannot be accepted or the proper internal queue is full, Dds_RxIndication shall call the API Det_ReportRuntimeError with the runtime error code DDS_E_L_PDUID_IGNORED and return.]([FO_RS_Dds_00016](#))

[CP_SWS_Dds_00863]{DRAFT} Dds_RxIndication - OK condition [If the reception lower layer PDU can be accepted, the Dds_RxIndication shall store this PDU into the proper internal queue and return.]([FO_RS_Dds_00016](#))

8.4.2 Dds_TxConfirmation

[CP_SWS_Dds_00843]{DRAFT} Definition of callback function Dds_TxConfirmation [

| | | |
|---------------------------|---|--|
| Service Name | Dds_TxConfirmation (draft) | |
| Syntax | <pre>void Dds_TxConfirmation (PduIdType TxPduId, Std_ReturnType result)</pre> | |
| Service ID [hex] | 0x40 | |
| Sync/Async | Synchronous | |
| Reentrancy | Reentrant for different PduIds. Non reentrant for the same PduId. | |
| Parameters (in) | TxPduId | ID of the PDU that has been transmitted. |
| | result | E_OK: The PDU was transmitted. E_NOT_OK: Transmission of the PDU failed. |
| Parameters (inout) | None | |
| Parameters (out) | None | |
| Return value | None | |
| Description | <p>The PDU Router interface module confirms the transmission of a PDU, or the failure to transmit a PDU.</p> <p>Tags: atp.Status=draft</p> | |
| Available via | Dds.h | |

]([FO_RS_Dds_00015](#))

[CP_SWS_Dds_00871]{DRAFT} Dds_TxConfirmation - Error conditions [The function Dds_TxConfirmation() shall call the Det_ReportError(), if development error detection is enabled and if function call has failed because of the following reasons:

- Dds module is not initialized (DDS_E_UNINIT)

- Invalid lower layer TxPduId (DDS_E_L_PDUID_INVALID).

](FO_RS_Dds_00015)

[CP_SWS_Dds_00872]{DRAFT} Dds_TxConfirmation behaviour
[Dds_TxConfirmation shall call the API PduR_DdsTxConfirmation with the same input parameters and return.] (FO_RS_Dds_00015)

8.4.3 Dds_TriggerTransmit

[CP_SWS_Dds_00835]{DRAFT} Definition of callback function Dds_TriggerTransmit

| | | |
|---------------------------|---|---|
| Service Name | Dds_TriggerTransmit (draft) | |
| Syntax | Std_ReturnType Dds_TriggerTransmit (PduIdType TxPduId, PduInfoType* PduInfoPtr) | |
| Service ID [hex] | 0x41 | |
| Sync/Async | Synchronous | |
| Reentrancy | Reentrant for different PduIds. Non reentrant for the same PduId. | |
| Parameters (in) | TxPduId | ID of the SDU that is requested to be transmitted. |
| Parameters (inout) | PduInfoPtr | Contains a pointer to a buffer (SduDataPtr) to where the SDU data shall be copied, and the available buffer size in SduLength. On return, the service will indicate the length of the copied SDU data in SduLength. |
| Parameters (out) | None | |
| Return value | Std_ReturnType | E_OK: SDU has been copied and SduLength indicates the number of copied bytes. E_NOT_OK: No SDU data has been copied. PduInfoPtr must not be used since it may contain a NULL pointer or point to invalid data. |
| Description | Within this API, the upper layer module (called module) shall check whether the available data fits into the buffer size reported by PduInfoPtr->SduLength. If it fits, it shall copy its data into the buffer provided by PduInfoPtr->SduDataPtr and update the length of the actual copied data in PduInfoPtr->SduLength. If not, it returns E_NOT_OK without changing PduInfoPtr. Tags: atp.Status=draft | |
| Available via | Dds.h | |

](FO_RS_Dds_00015)

[CP_SWS_Dds_00881]{DRAFT} Dds_TriggerTransmit - Error conditions [The function Dds_TriggerTransmit() shall call the Det_ReportError(), if development error detection is enabled and if function call has failed because of the following reasons:

- Dds module is not initialized (DDS_E_UNINIT)
- PduInfoPtr equals NULL_PTR (DDS_E_PARAM_POINTER).
- Invalid lower layer TxPduId (DDS_E_L_PDUID_INVALID).

](FO_RS_Dds_00015)

[CP_SWS_Dds_00882]{DRAFT} Dds_TriggerTransmit behaviour [Within the function Dds_TriggerTransmit(), the Dds BSW shall copy the contents of its PDU transmit buffer to the PDU buffer given by PduInfoPtr->SduDataPtr and update PduInfoPtr->SduLength with length of the copied data accordingly.] ([FO_RS_Dds_00015](#))

[CP_SWS_Dds_00883]{DRAFT} Dds_TriggerTransmit - Error conditions [If another Dds_TriggerTransmit() request on the same Pduld is not yet completed, the function Dds_TriggerTransmit() shall call the Det_ReportRuntimeError() with the code DDS_E_L_PDUID_IGNORED.] ([FO_RS_Dds_00015](#))

[CP_SWS_Dds_CONSTR_00884]{DRAFT} Dds_TriggerTransmit limitation [The validation of the Dds configuration shall consider the LdCom configuration. If any PDU belonging to Dds BSW has a non NULL value for LdComTxTriggerTransmit, the configuration shall be rejected as invalid.]

Rationale: The Dds_TriggerTransmit function can be called only by lower-layer module.] ([FO_RS_Dds_00015](#))

8.5 Scheduled functions

Following functions are called directly by Basic Software Scheduler. They have no return value and no parameter. All functions shall be non-reentrant

8.5.1 Dds_MainFunction_Rx

[CP_SWS_Dds_00823]{DRAFT} Definition of scheduled function Dds_MainFunction_Rx [

| | |
|-------------------------|---|
| Service Name | Dds_MainFunction_Rx (draft) |
| Syntax | void Dds_MainFunction_Rx (void) |
| Service ID [hex] | 0x10 |
| Description | Scheduled function of the Dds module for reception purpose Tags: atp.Status=draft |
| Available via | SchM_Dds.h |

] ([SRS_BSW_00424](#), [SRS_BSW_00433](#), [SRS_BSW_00373](#))

[CP_SWS_Dds_00826]{DRAFT} Dds_MainFunction_Rx - Error conditions [If, during processing of the Dds_MainFunction_Rx() any error or violation occurred, the Dds_MainFunction_Rx shall call the Det_ReportRuntimeError() with the DDS_INTERNAL_ERROR code, drop received data and return.] ([FO_RS_Dds_00016](#))

[CP_SWS_Dds_00827]{DRAFT} Dds_MainFunction_Rx - OK conditions [If, during processing of the Dds_MainFunction_Rx(), everything is ok, the Dds_MainFunction_Rx shall find the proper readers to manage the reception of

data and shall call the API PduR_SoAdRxIndication with the resulting upper layer PDU as input parameter.](FO_RS_Dds_00016)

8.5.2 Dds_MainFunction_Tx

Into the Dds_MainFunction_Tx function all the DDS Middleware processing for transmission shall be performed. Internal DDS processing is out of the scope of the SWS: it is vendor-specific (as soon as the implementation is compliant with DDS OMG Specification ([1])). In the following section there are requirements needed to specify AUTOSAR APIs.

[CP_SWS_Dds_00824]{DRAFT} Definition of scheduled function Dds_MainFunction_Tx [

| | |
|-------------------------|--|
| Service Name | Dds_MainFunction_Tx (draft) |
| Syntax | void Dds_MainFunction_Tx (void) |
| Service ID [hex] | 0x11 |
| Description | Scheduled function of the Dds module for transmission purpose Tags: atp.Status=draft |
| Available via | SchM_Dds.h |

](SRS_BSW_00424, SRS_BSW_00433, SRS_BSW_00373)

[CP_SWS_Dds_00829]{DRAFT} Dds_MainFunction_Tx - Error conditions [If, during processing of the Dds_MainFunction_Tx() any error or violation occurred, the Dds_MainFunction_Tx shall call the Det_ReportRuntimeError() with the DDS_INTERNAL_ERROR code, shall call the PduR_DdsTxConfirmation with result = E_NOT_OK, shall drop received data and return.](FO_RS_Dds_00015)

[CP_SWS_Dds_00830]{DRAFT} Dds_MainFunction_Tx - OK conditions [If, during processing of the Dds_MainFunction_Tx(), everything is ok, the Dds_MainFunction_Tx shall find the proper writers to manage the transmission of data and shall call the API PduR_DdsTransmit with the resulting lower layer PDU as input parameter.](FO_RS_Dds_00015)

8.6 Expected interfaces

In this chapter all interfaces required from other modules are listed.

8.6.1 Mandatory interfaces

[CP_SWS_Dds_00832]{DRAFT} Definition of mandatory interfaces in module Dds

[

| API Function | Header File | Description |
|--------------------------------|-------------|--|
| Det_ReportError | Det.h | Service to report development errors. |
| Det_ReportRuntimeError | Det.h | Service to report runtime errors. If a callout has been configured then this callout shall be called. |
| PduR_DdsRxIndication (draft) | PduR_Dds.h | Indication of a received PDU from a lower layer communication interface module. |
| PduR_DdsTransmit (draft) | PduR_Dds.h | Requests transmission of a PDU. |
| PduR_DdsTxConfirmation (draft) | PduR_Dds.h | The lower layer communication interface module confirms the transmission of a PDU, or the failure to transmit a PDU. |

]([FO_RS_Dds_00005](#), [FO_RS_Dds_00009](#), [FO_RS_Dds_00010](#), [FO_RS_Dds_00015](#), [FO_RS_Dds_00016](#))

8.6.2 Optional interfaces

[CP_SWS_Dds_00833]{DRAFT} Definition of optional interfaces in module Dds

[

| API Function | Header File | Description |
|---------------------|-------------|--|
| Crc_CalculateCRC32 | Crc.h | This service makes a CRC32 calculation on Crc_Length data bytes. |
| Crc_CalculateCRC64 | Crc.h | This service makes a CRC64 calculation on Crc_Length data bytes, using the polynomial 0x42F0E1EBA9EA3693. This CRC routine is used by E2E Profile 7. |
| Csm_MacGenerate | Csm.h | Uses the given data to perform a MAC generation and stores the MAC in the memory location pointed to by the MAC pointer. |
| Csm_MacVerify | Csm.h | Verifies the given MAC by comparing if the MAC is generated with the given data. |
| StbM_GetCurrentTime | StbM.h | Returns a time tuple (Local time, Global time and Timebase status) and user data details Note: This API shall be called with locked interrupts / within an Exclusive Area to prevent interruption (i.e., the risk that the time stamp is outdated on return of the function call). |

]([FO_RS_Dds_00005](#), [FO_RS_Dds_00009](#), [FO_RS_Dds_00010](#))

8.6.3 Configurable interfaces

None.

9 Sequence diagrams

9.1 Transmission

9.1.1 Dds message transmission

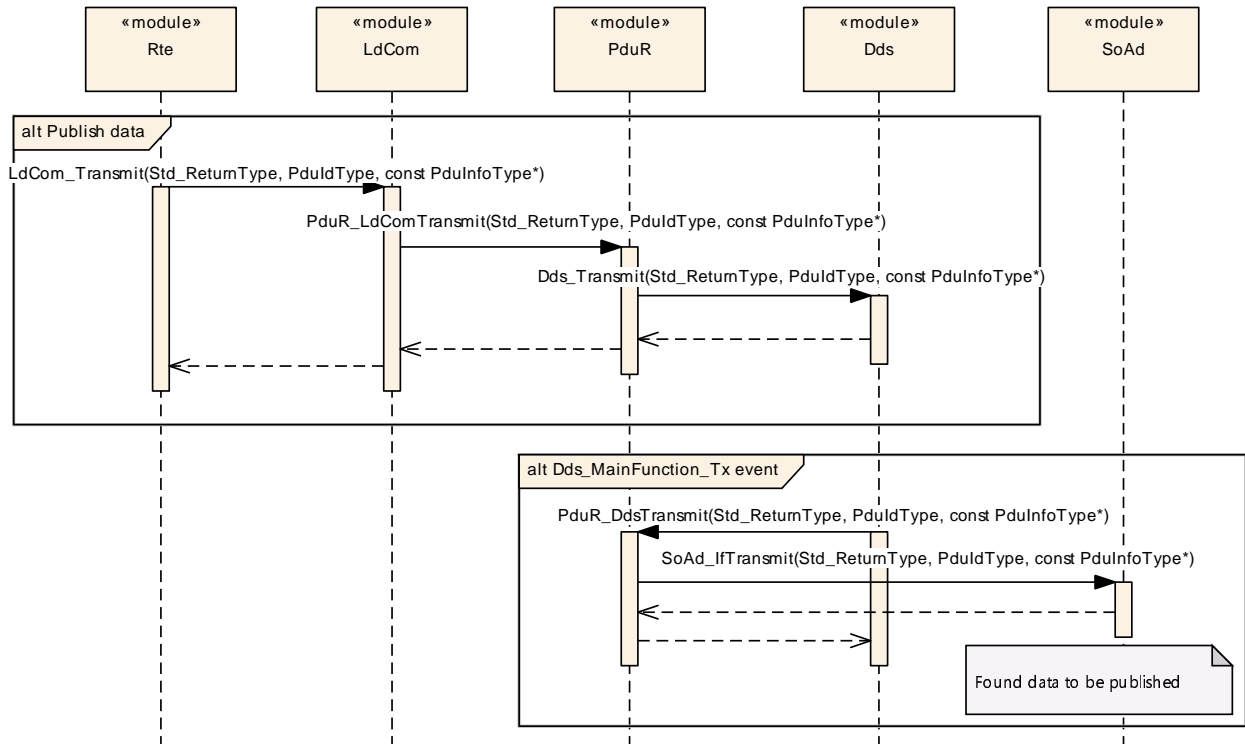


Figure 9.1: Dds transmission path

9.1.2 Dds message transmission confirmation

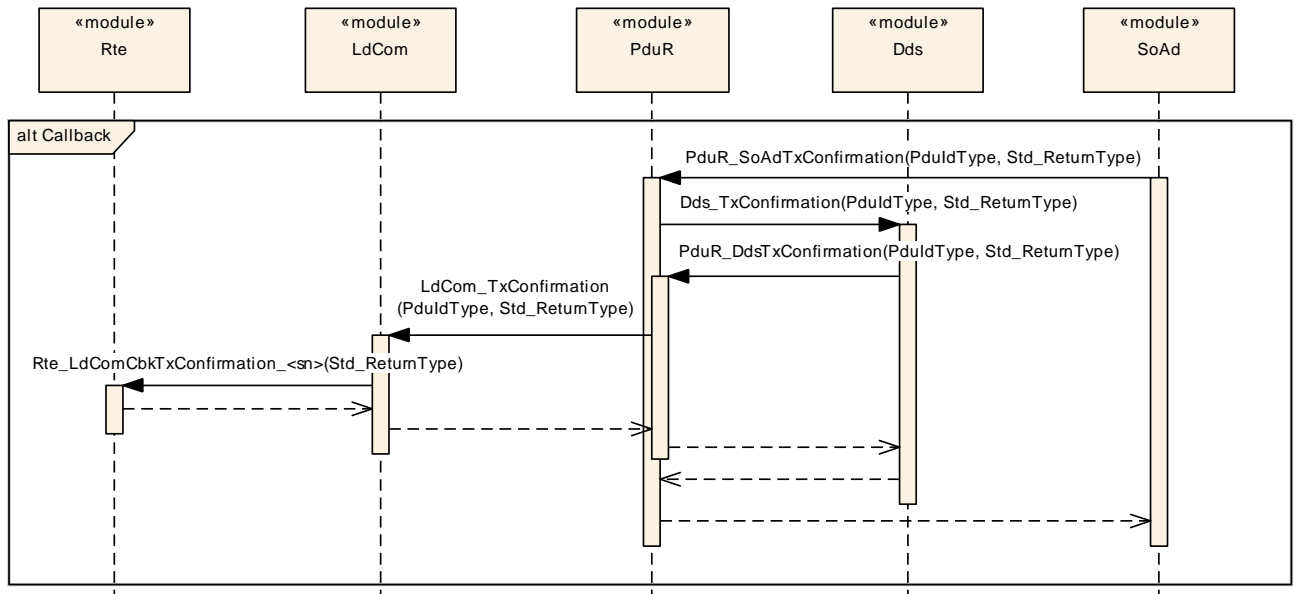


Figure 9.2: Dds transmission confirmation path

9.2 Reception

9.2.1 Dds received indication event

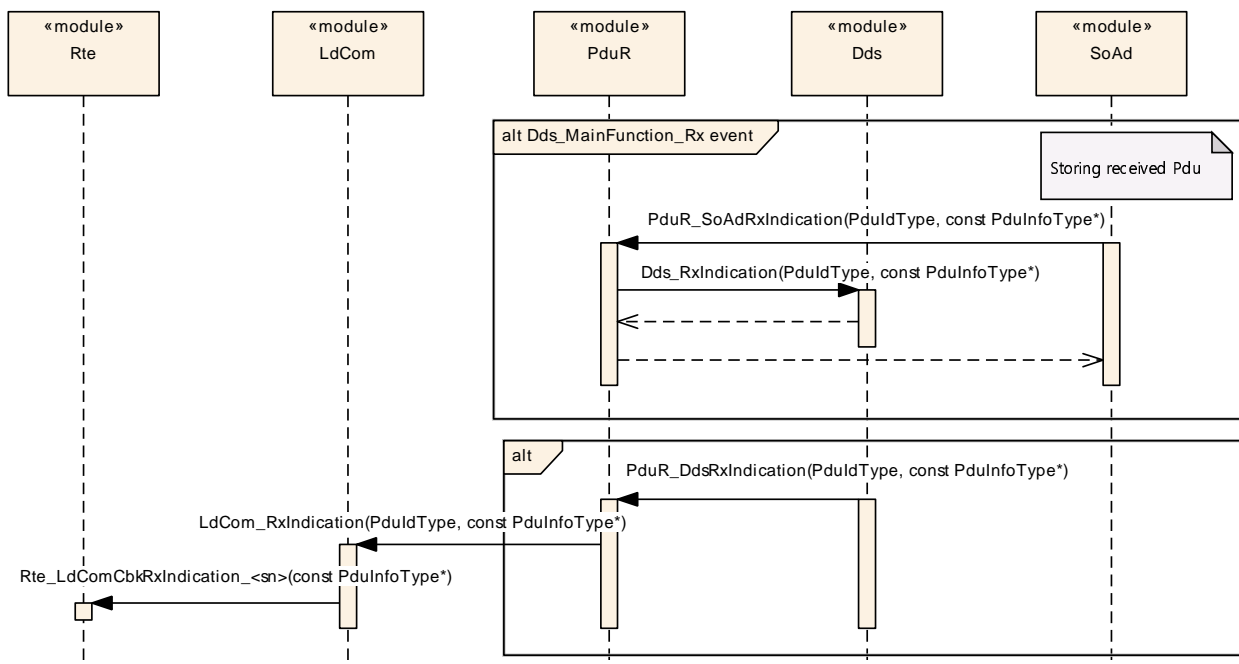


Figure 9.3: Dds reception path

10 Configuration specification

In general, this chapter defines configuration parameters and their clustering into containers. In order to support the specification Chapter 10.1 describes fundamentals. It also specifies a template (table) you shall use for the parameter specification. We intend to leave Chapter 10.1 in the specification to guarantee comprehension.

Chapter 10.2 specifies the structure (containers) and the parameters of the module Dds.

Chapter 10.3 specifies published information of the module Dds.

10.1 How to read this chapter

For details refer to the chapter 10.1 “Introduction to configuration specification” in SWS_BSWGeneral.

10.2 Containers and configuration parameters

The following chapters summarize all configuration parameters.

10.2.1 Dds

| | |
|-----------------------------------|---|
| SWS Item | [ECUC_Dds_00001] |
| Module Name | Dds |
| Description | Configuration of the Dds module. |
| Post-Build Variant Support | true |
| Supported Config Variants | VARIANT-POST-BUILD, VARIANT-PRE-COMPILE |

| Included Containers | | |
|----------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsConfig | 1 | This container contains the configuration parameters and sub containers of the AUTOSAR Dds module. Tags: atp.Status=draft |
| DdsGeneral | 1 | This container lists the general configuration parameters for the Dds module. Tags: atp.Status=draft |

In the picture below, the UML diagram of Dds BSW is shown:

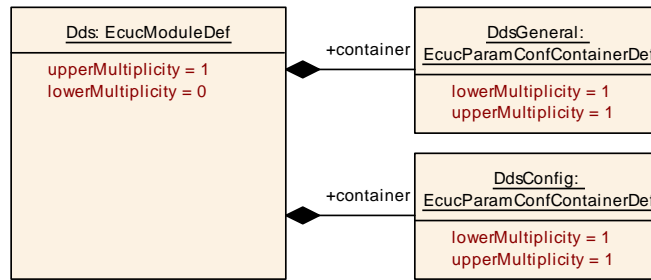


Figure 10.1: Dds model

10.2.2 Dds General

| | |
|--------------------------|--|
| SWS Item | [ECUC_Dds_00002] |
| Container Name | DdsGeneral |
| Parent Container | Dds |
| Description | This container lists the general configuration parameters for the Dds module. Tags: atp.Status=draft |
| Configuration Parameters | |

| | | | |
|---------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00003] | | |
| Parameter Name | DdsDevErrorDetect | | |
| Parent Container | DdsGeneral | | |
| Description | Switches the development error detection and notification on or off. <ul style="list-style-type: none"> • true: detection and notification is enabled. • false: detection and notification is disabled. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucBooleanParamDef | | |
| Default value | false | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

| | |
|------------------|--|
| SWS Item | [ECUC_Dds_00004] |
| Parameter Name | DdsMainRxFunctionPeriod |
| Parent Container | DdsGeneral |
| Description | This parameter defines the cycle time in seconds of the periodic call of the Dds_MainFunction_Rx. Tags: atp.Status=draft |
| Multiplicity | 1 |
| Type | EcucFloatParamDef |
| Range |]0 .. INF[|
| Default value | – |





| | | | |
|----------------------------------|-------------------------|---|--------------|
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00127] | | |
| Parameter Name | DdsMainTxFunctionPeriod | | |
| Parent Container | DdsGeneral | | |
| Description | This parameter defines the cycle time in seconds of the periodic call of the Dds_Main Function_Tx. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range |]0 .. INF[| | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00128] | | |
| Parameter Name | DdsSynchronizedTimeBaseRef | | |
| Parent Container | DdsGeneral | | |
| Description | Reference to a StbM Synchronized Time Base. Tags: atp.Status=draft | | |
| Multiplicity | 0..1 | | |
| Type | Symbolic name reference to StbMSynchronizedTimeBase | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

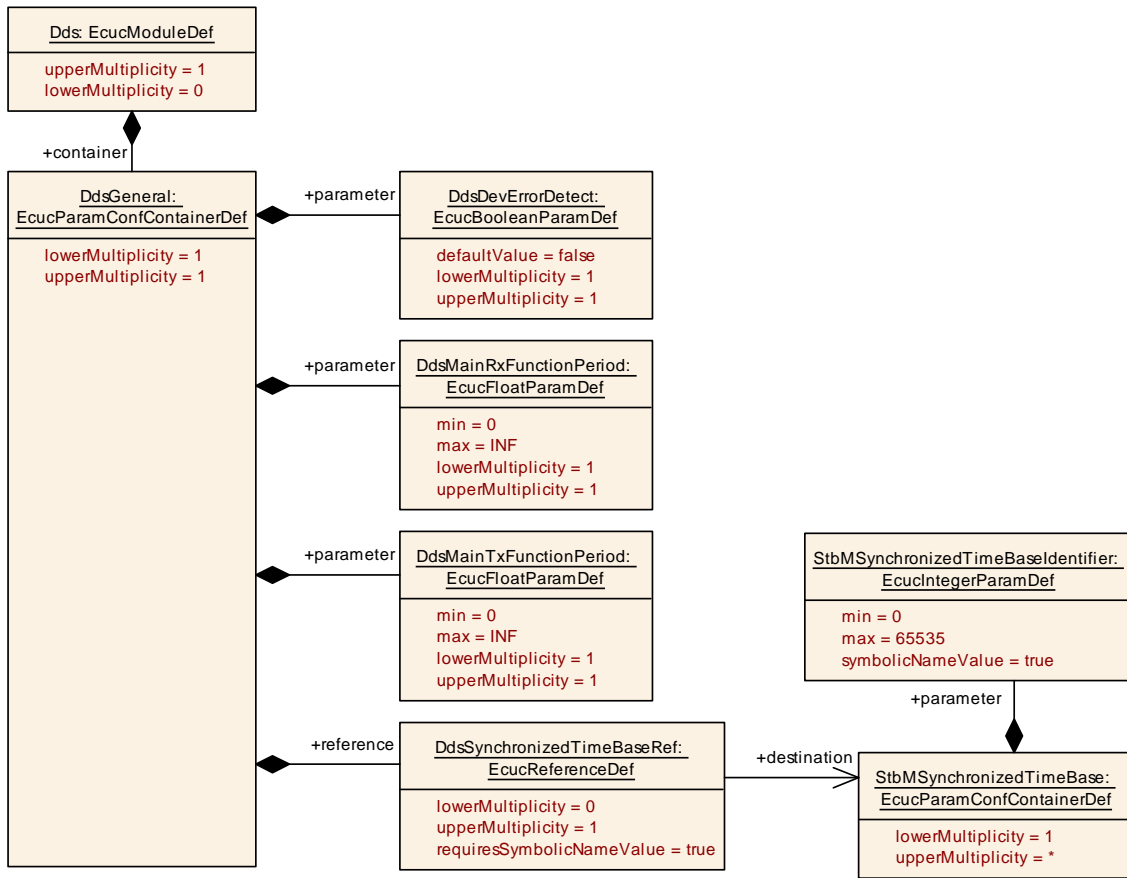


Figure 10.2: Dds General

10.2.3 Dds Config

| | |
|---------------------------------|---|
| SWS Item | [ECUC_Dds_00005] |
| Container Name | DdsConfig |
| Parent Container | Dds |
| Description | This container contains the configuration parameters and sub containers of the AUTOSAR Dds module. Tags: atp.Status=draft |
| Configuration Parameters | |

| Included Containers | | |
|---------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsAppDataRxPduCollection | 0..1 | Collection of upper layer Rx PDUs towards the application layer. Tags: atp.Status=draft |
| DdsAppDataTxPduCollection | 0..1 | Collection of upper layer Tx PDUs towards the application layer. Tags: atp.Status=draft |





| Included Containers | | |
|--|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDomainParticipantCollection | 0..1 | Collection of DDS Domain Participants. Tags: atp.Status=draft |
| DdsRxQueueCollection | 0..1 | Collection of Rx queues. Tags: atp.Status=draft |
| DdsTxQueueCollection | 0..1 | Collection of Tx queues. Tags: atp.Status=draft |

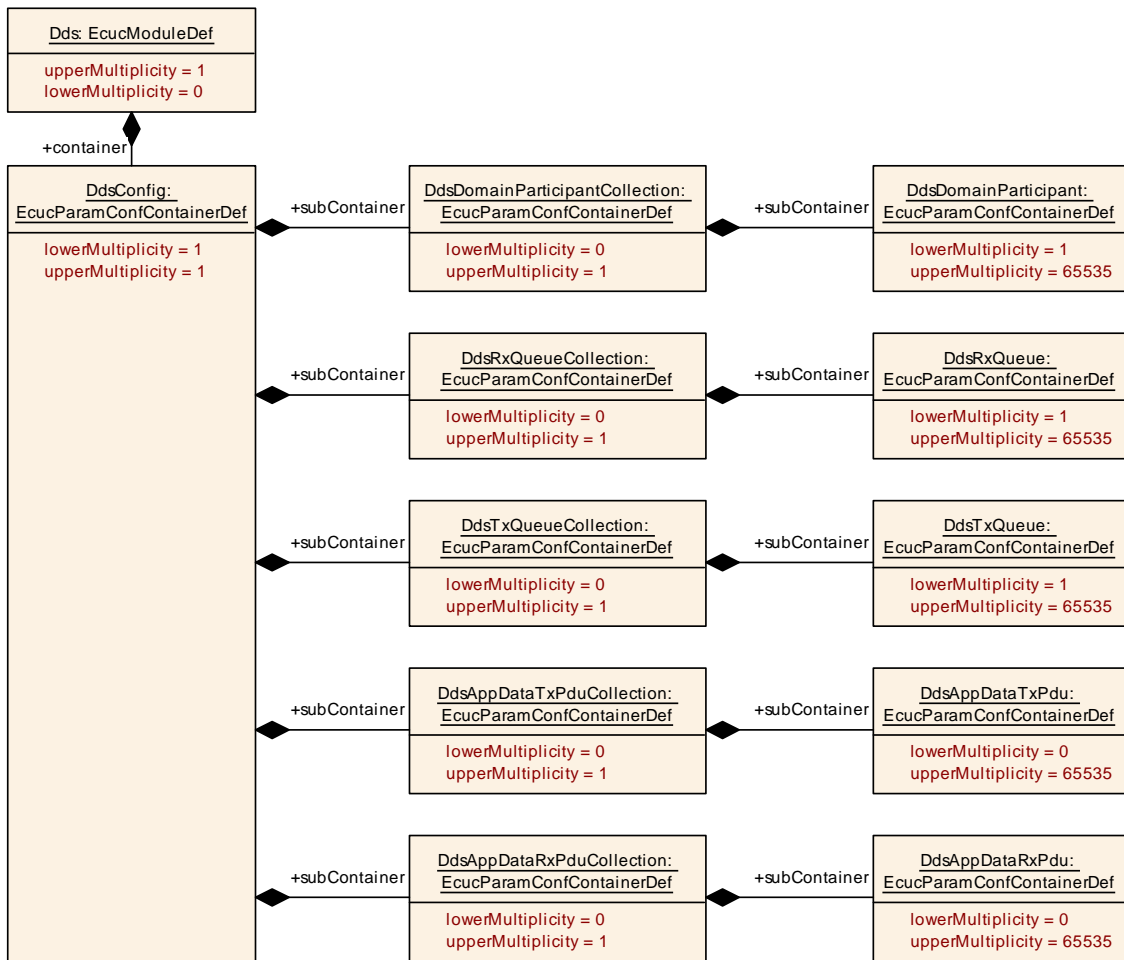


Figure 10.3: Dds Config

10.2.3.1 DdsAppDataPduCollection

The [DdsAppDataTxPduCollection](#) and [DdsAppDataRxPduCollection](#) containers model the pool of all the upper layer PDUs (respectively Tx and Rx) used for interaction between application layers and the Dds module. They are used just to have a unique definition points for all the upper layer PDUs (they are simply containers of containers).

In the picture below, the UML diagram of [DdsAppDataTxPduCollection](#) and [DdsAppDataRxPduCollection](#) is shown:

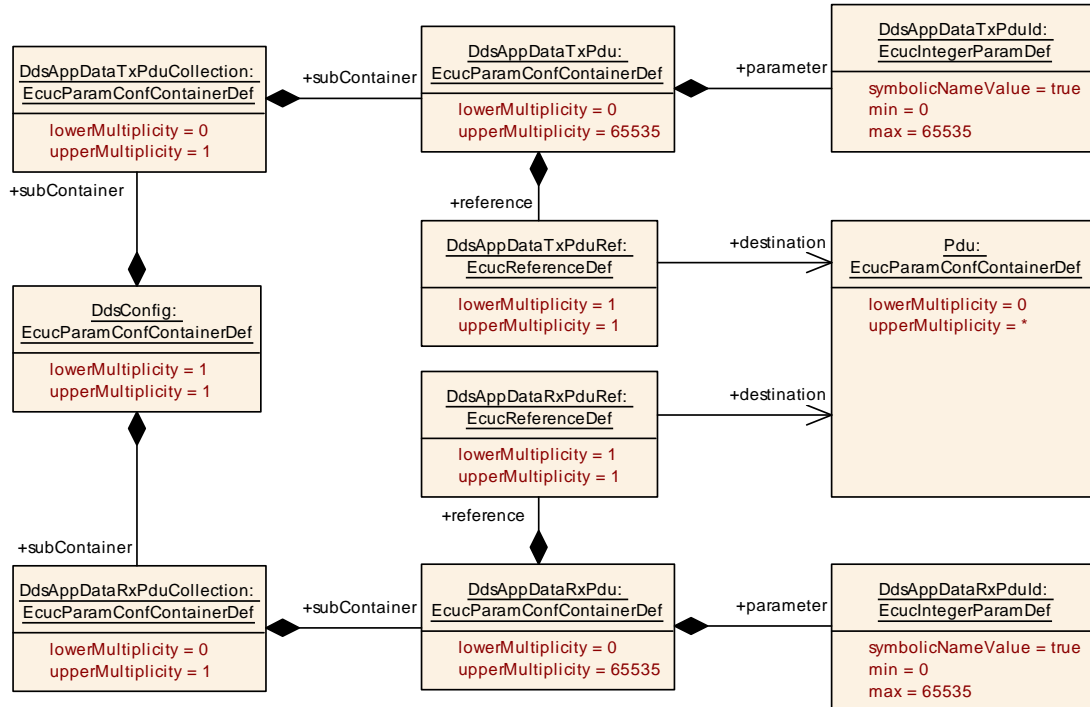


Figure 10.4: Dds Upper layer Pdus

10.2.3.1.1 DdsAppDataTxPduCollection

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00131] | | |
| Container Name | DdsAppDataTxPduCollection | | |
| Parent Container | DdsConfig | | |
| Description | Collection of upper layer Tx PDUs towards the application layer. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|---------------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsAppDataTxPdu | 0..65535 | The upper layer PDU used to transmit data from Application to DDS itself. Tags: atp.Status=draft |

10.2.3.1.1.1 DdsAppDataTxPdu

| | | | |
|---|--|---|---------------------|
| SWS Item | [ECUC_Dds_00132] | | |
| Container Name | DdsAppDataTxPdu | | |
| Parent Container | DdsAppDataTxPduCollection | | |
| Description | The upper layer PDU used to transmit data from Application to DDS itself. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | true | | |
| Multiplicity Configuration Class | Pre-compile time | X | VARIANT-PRE-COMPILE |
| | Link time | – | |
| | Post-build time | X | VARIANT-POST-BUILD |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00133] | | |
| Parameter Name | DdsAppDataTxPduId | | |
| Parent Container | DdsAppDataTxPdu | | |
| Description | The current pdu local id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00134] | | |
| Parameter Name | DdsAppDataTxPduRef | | |
| Parent Container | DdsAppDataTxPdu | | |
| Description | The reference to a PDU in the global PDU structure described in the AUTOSAR ECU Configuration Specification. This reference will be used by the Dds module to derive the PDU Id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to Pdu | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

10.2.3.1.2 DdsAppDataRxPduCollection

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00178] | | |
| Container Name | DdsAppDataRxPduCollection | | |
| Parent Container | DdsConfig | | |
| Description | Collection of upper layer Rx PDUs towards the application layer. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|---------------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsAppDataRxPdu | 0..65535 | The upper layer PDU used to send received data from DDS to Application. Tags: atp.Status=draft |

10.2.3.1.2.1 DdsAppDataRxPdu

| | | | |
|---|--|---|---------------------|
| SWS Item | [ECUC_Dds_00135] | | |
| Container Name | DdsAppDataRxPdu | | |
| Parent Container | DdsAppDataRxPduCollection | | |
| Description | The upper layer PDU used to send received data from DDS to Application. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | true | | |
| Multiplicity Configuration Class | Pre-compile time | X | VARIANT-PRE-COMPILE |
| | Link time | – | |
| | Post-build time | X | VARIANT-POST-BUILD |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00136] | | |
| Parameter Name | DdsAppDataRxPduId | | |
| Parent Container | DdsAppDataRxPdu | | |
| Description | The current pdu local id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |





| | | | |
|---------------------------|------------------------|---|--|
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00137] | | |
| Parameter Name | DdsAppDataRxPduRef | | |
| Parent Container | DdsAppDataRxPdu | | |
| Description | <p>The reference to a PDU in the global PDU structure described in the AUTOSAR ECU Configuration Specification.</p> <p>This reference will be used by the Dds module to derive the PDU Id.</p> <p>Tags: atp.Status=draft</p> | | |
| Multiplicity | 1 | | |
| Type | Reference to Pdu | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

10.2.3.2 DdsQueueCollection

The [DdsTxQueueCollection](#) and [DdsRxQueueCollection](#) containers model the pool of all the queue used respectively to store:

- [DdsAppDataTxPdus](#) from PduR (as upper) to DDS
- [DdsRtpsDataRxPdus](#) or [DdsRtpsMulticastDataRxPdus](#) from PduR (as lower) to DDS.

There are used just to have a unique definition points for all the queues (they are simply containers of containers).

10.2.3.2.1 DdsRxQueueCollection

The [DdsRxQueueCollection](#) container is used to collect [DdsRxQueues](#).

| | | | |
|--|--|--|--|
| SWS Item | [ECUC_Dds_00180] | | |
| Container Name | DdsRxQueueCollection | | |
| Parent Container | DdsConfig | | |
| Description | <p>Collection of Rx queues.</p> <p>Tags: atp.Status=draft</p> | | |
| Post-Build Variant Multiplicity | false | | |





| | | | |
|---|-------------------------|---|--------------|
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsRxQueue | 1..65535 | The queue used to save DdsRtpsDataRxPdus from PduR (as lower) to DDS. One single queue can be used to save one or more DdsRtpsDataRxPdus . Tags: atp.Status=draft |

10.2.3.2.1.1 DdsRxQueue

The [DdsRxQueue](#) container models the queues used to store [DdsRtpsDataRxPdus](#) or [DdsRtpsMulticastDataRxPdus](#) from PduR (as lower) to DDS.

Note: One single queue can be used to save one or more [DdsRtpsDataRxPdus](#) or [DdsRtpsMulticastDataRxPdu](#).

The processing of those queues is up to DDS middleware, according its own internal policies (QoS policies, DdsDataReaders subscribed etc.).

In the picture below, the UML diagram of [DdsRxQueue](#) template is shown:

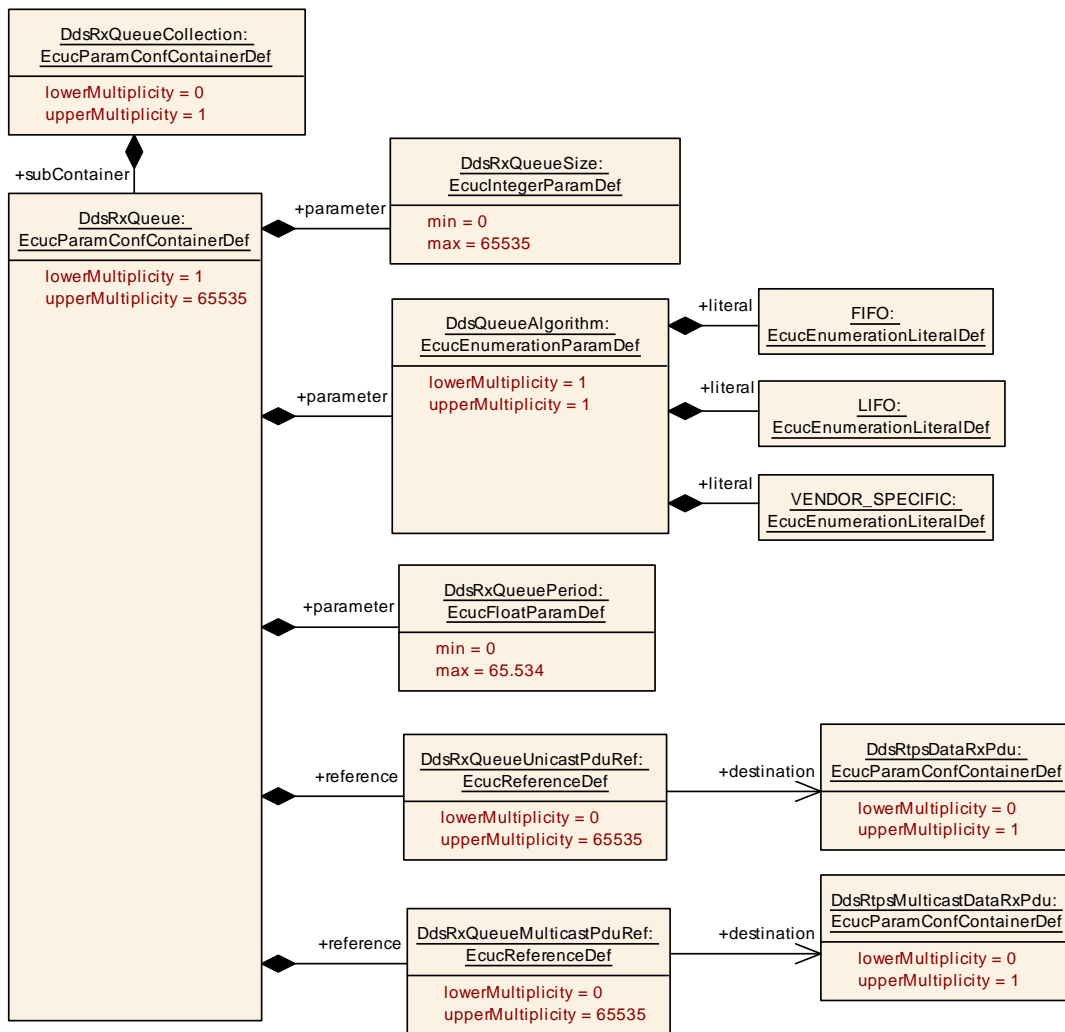


Figure 10.5: DdsRxQueue

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00167] | | |
| Container Name | DdsRxQueue | | |
| Parent Container | DdsRxQueueCollection | | |
| Description | The queue used to save DdsRtpsDataRxPdus from PduR (as lower) to DDS. One single queue can be used to save one or more DdsRtpsDataRxPdus. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|------------------|----------------------------|--|--|
| SWS Item | [ECUC_Dds_00170] | | |
| Parameter Name | DdsQueueAlgorithm | | |
| Parent Container | DdsRxQueue | | |





| | | | |
|----------------------------------|--|-----------------|-------------------------------|
| Description | Single queue scheduling algorithm Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | FIFO | FIFO | Tags: atp.Status=draft |
| | LIFO | LIFO | Tags: atp.Status=draft |
| | VENDOR_SPECIFIC | VENDOR_SPECIFIC | Tags: atp.Status=draft |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00169] | | |
| Parameter Name | DdsRxQueuePeriod | | |
| Parent Container | DdsRxQueue | | |
| Description | Scheduling period of the single queue. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00168] | | |
| Parameter Name | DdsRxQueueSize | | |
| Parent Container | DdsRxQueue | | |
| Description | Queue size in bytes Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00172] | | |
| Parameter Name | DdsRxQueueMulticastPduRef | | |
| Parent Container | DdsRxQueue | | |
| Description | Reference to a reception multicast lower layer PDU to be stored in the given queue. Tags: atp.Status=draft | | |
| Multiplicity | 0..65535 | | |
| Type | Reference to DdsRtpsMulticastDataRxPdu | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00171] | | |
| Parameter Name | DdsRxQueueUnicastPduRef | | |
| Parent Container | DdsRxQueue | | |
| Description | Reference to a reception unicast lower layer Pdu to be stored in the given queue. Tags: atp.Status=draft | | |
| Multiplicity | 0..65535 | | |
| Type | Reference to DdsRtpsDataRxPdu | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

10.2.3.2.2 DdsTxQueueCollection

The [DdsTxQueueCollection](#) container is used to collect [DdsTxQueues](#).

| | |
|-------------------------|---------------------------|
| SWS Item | [ECUC_Dds_00181] |
| Container Name | DdsTxQueueCollection |
| Parent Container | DdsConfig |





| | | | |
|---|---|---|--------------|
| Description | Collection of Tx queues. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------|---------------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsTxQueue | 1..65535 | The queue used to save DdsAppDataTxPduS from PduR (as upper) to DDS. One single queue can be used to save one or more DdsAppDataTxPduS. Tags: atp.Status=draft |

10.2.3.2.2.1 DdsTxQueue

The [DdsTxQueue](#) container models the queues used to save [DdsAppDataTxPduS](#) from PduR (as upper) to DDS.

Note: One single [DdsTxQueue](#) can be used to save one or more [DdsAppDataTxPduS](#).

The processing of those queues is up to DDS middleware, according its own internal policies (QoS policies, DdsDataWriters to be published etc.).

In the picture below, the UML diagram of [DdsTxQueue](#) template is shown:

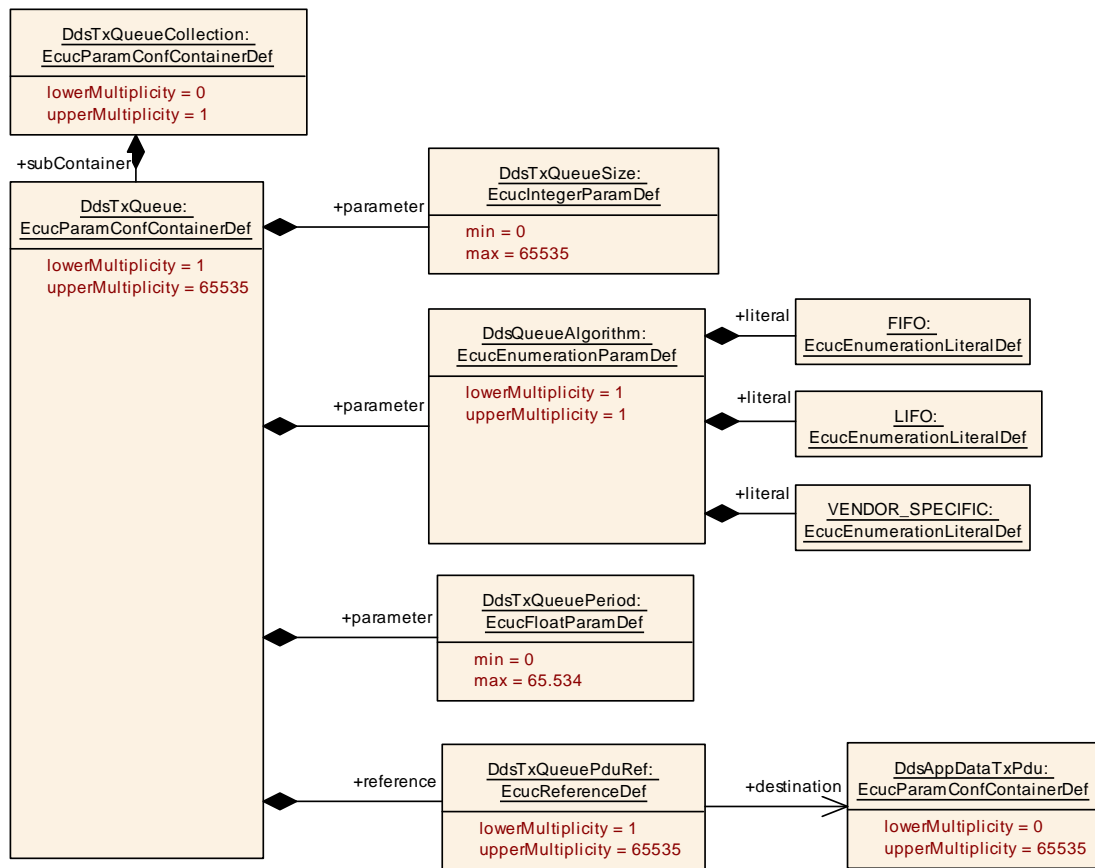


Figure 10.6: DdsTxQueue

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00173] | | |
| Container Name | DdsTxQueue | | |
| Parent Container | DdsTxQueueCollection | | |
| Description | The queue used to save DdsAppDataTxPdus from PduR (as upper) to DDS. One single queue can be used to save one or more DdsAppDataTxPdus. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Configuration Parameters | | | |

| | | | |
|------------------|--|--|--|
| SWS Item | [ECUC_Dds_00170] | | |
| Parameter Name | DdsQueueAlgorithm | | |
| Parent Container | DdsTxQueue | | |
| Description | Single queue scheduling algorithm Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |





| | | | |
|----------------------------------|-------------------------|--|--------------|
| Range | FIFO | FIFO Tags: atp.Status=draft | |
| | LIFO | LIFO Tags: atp.Status=draft | |
| | VENDOR_SPECIFIC | VENDOR_SPECIFIC Tags: atp.Status=draft | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00175] | | |
| Parameter Name | DdsTxQueuePeriod | | |
| Parent Container | DdsTxQueue | | |
| Description | Scheduling period of the single queue. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00174] | | |
| Parameter Name | DdsTxQueueSize | | |
| Parent Container | DdsTxQueue | | |
| Description | Queue size in bytes Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|-------------------------|----------------------------|--|--|
| SWS Item | [ECUC_Dds_00176] | | |
| Parameter Name | DdsTxQueuePduRef | | |
| Parent Container | DdsTxQueue | | |





| | | | |
|---|---|---|--------------|
| Description | Reference to a transmission upper layer PDU to be stored in the given queue. Tags: atp.Status=draft | | |
| Multiplicity | 1..65535 | | |
| Type | Reference to DdsAppDataTxPdu | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

10.2.3.3 DdsDomainParticipantCollection

The [DdsDomainParticipantCollection](#) container models the pool of all the [DdsDomainParticipant](#). It is used just to have a unique definition points for all the [DdsDomainParticipants](#) (it is simply a container of containers).

In the picture below, the UML diagram of [DdsDomainParticipantCollection](#) container is shown.

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00179] | | |
| Container Name | DdsDomainParticipantCollection | | |
| Parent Container | DdsConfig | | |
| Description | Collection of DDS Domain Participants. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|--------------------------------------|---------------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDomainParticipant | 1..65535 | This container represents the configuration of one single "Domain Participant" to which the current node belongs. One node can belong to more than one Domain Participant. One node can communicate only with other nodes belonging to the same Domain Participant. Tags: atp.Status=draft |

10.2.3.3.1 DdsDomainParticipant

In the picture below, the UML diagram of [DdsDomainParticipant](#) container is shown.

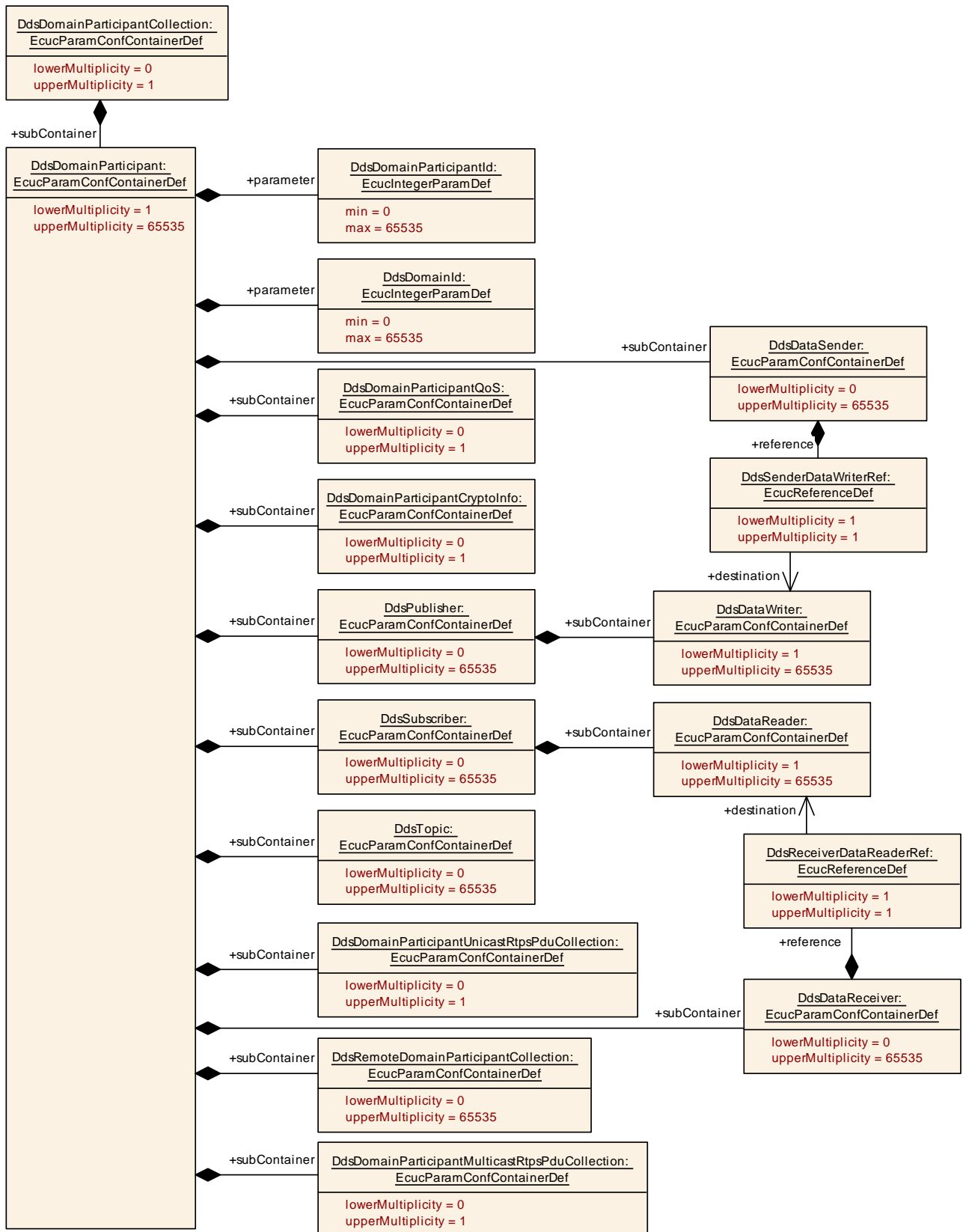


Figure 10.7: Dds Domain Participant

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00012] | | |
| Container Name | DdsDomainParticipant | | |
| Parent Container | DdsDomainParticipantCollection | | |
| Description | <p>This container represents the configuration of one single "Domain Participant" to which the current node belongs. One node can belong to more than one Domain Participant. One node can communicate only with other nodes belonging to the same Domain Participant.</p> <p>Tags: atp.Status=draft</p> | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00138] | | |
| Parameter Name | DdsDomainId | | |
| Parent Container | DdsDomainParticipant | | |
| Description | <p>The ID of the Domain to which this DDS node belongs.</p> <p>Tags: atp.Status=draft</p> | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00014] | | |
| Parameter Name | DdsDomainParticipantId | | |
| Parent Container | DdsDomainParticipant | | |
| Description | <p>Identifier of a Dds Domain Participant.</p> <p>Only entities that belong to the same domain participant can communicate each other.</p> <p>Tags: atp.Status=draft</p> | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | <p>scope: ECU</p> <p>dependency: inter-ECU - this value shall be shared between configurations.</p> | | |

| Included Containers | | |
|--|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDataReceiver | 0..65535 | Container useful to usability: it defines a DDS DataReader linked to a Sender/ReceiverInterface. Tags: atp.Status=draft |
| DdsDataSender | 0..65535 | Container useful to usability: it defines a DDS DataWriter linked to a Sender/ReceiverInterface. Tags: atp.Status=draft |
| DdsDomainParticipantCryptoInfo | 0..1 | This container contains the configuration of the Crypto service to be used by Entities belonging to this DomainParticipant. If it is not present, it means that not security mechanism is supported. Tags: atp.Status=draft |
| DdsDomainParticipantMulticastRtpsPduCollection | 0..1 | The pool of multicast lower layer PDUs towards lower network layers. Tags: atp.Status=draft |
| DdsDomainParticipantQoS | 0..1 | This container represents the configuration of QoS supported by the Dds DomainParticipant. Tags: atp.Status=draft |
| DdsDomainParticipantUnicastRtpsPduCollection | 0..1 | Collection of unicast lower layer PDUs towards lower network layers. Tags: atp.Status=draft |
| DdsPublisher | 0..65535 | This container represents the configuration of one Publisher. Tags: atp.Status=draft |
| DdsRemoteDomainParticipantCollection | 0..65535 | Collection of Remote Domain Participants. Tags: atp.Status=draft |
| DdsSubscriber | 0..65535 | This container represents the configuration of a Subscriber. Tags: atp.Status=draft |
| DdsTopic | 0..65535 | This container represents the configuration of one Topic. Tags: atp.Status=draft |

10.2.3.3.1.1 DdsDomainParticipantUnicastRtpsPduCollection

The [DdsDomainParticipantUnicastRtpsPduCollection](#) container models the pool of all the unicast lower layer PDUs (both Tx and Rx) towards lower network layers.

It is used just to have a unique definition points for all the unicast lower layer PDUs (it is simply a container of containers).

In the picture below, the UML diagram of [DdsDomainParticipantUnicastRtpsPduCollection](#) container is shown.

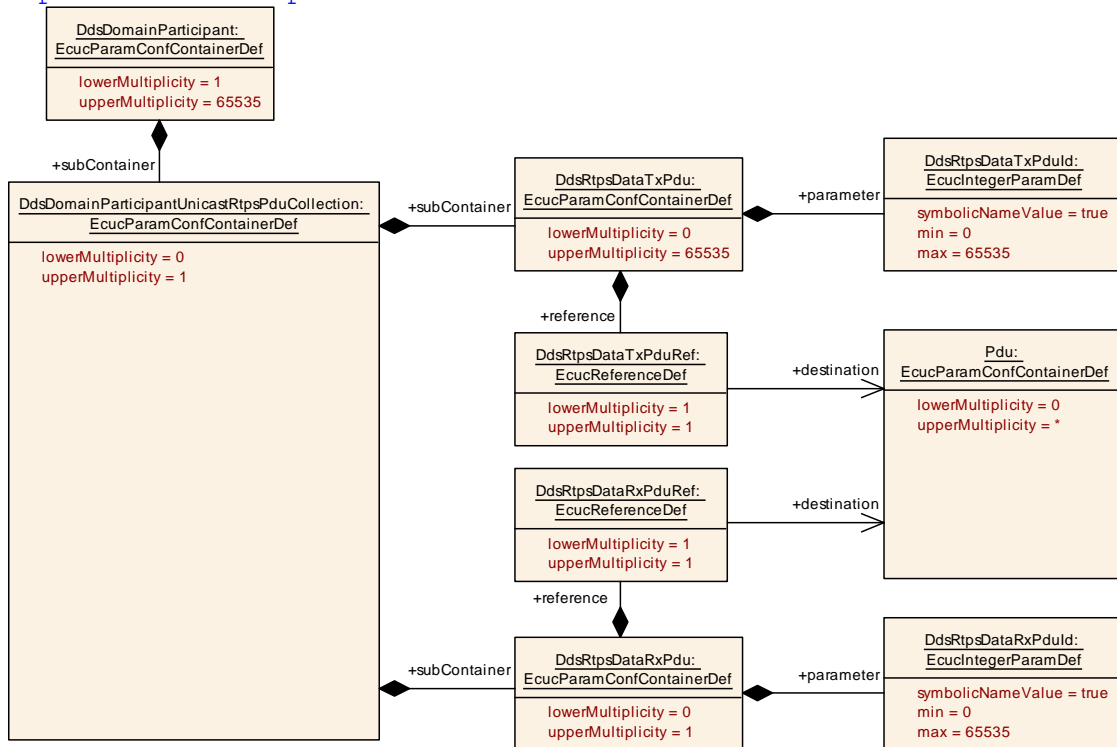


Figure 10.8: DdsDomainParticipantUnicastRtpsPduCollection

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00143] | | |
| Container Name | DdsDomainParticipantUnicastRtpsPduCollection | | |
| Parent Container | DdsDomainParticipant | | |
| Description | Collection of unicast lower layer PDUs towards lower network layers. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsRtpsDataRxPdu | 0..1 | The unicast reception lower layer pdu used to send data from the lower network layer to DDS itself. Tags: atp.Status=draft |
| DdsRtpsDataTxPdu | 0..65535 | The unicast transmission lower layer pdu used to transmit data from DDS to lower network layer. Tags: atp.Status=draft |

DdsRtpsDataRxPdu

| | | | |
|---|--|---|---------------------|
| SWS Item | [ECUC_Dds_00148] | | |
| Container Name | DdsRtpsDataRxPdu | | |
| Parent Container | DdsDomainParticipantUnicastRtpsPduCollection | | |
| Description | The unicast reception lower layer pdu used to send data from the lower network layer to DDS itself. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | true | | |
| Multiplicity Configuration Class | Pre-compile time | X | VARIANT-PRE-COMPILE |
| | Link time | – | |
| | Post-build time | X | VARIANT-POST-BUILD |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00149] | | |
| Parameter Name | DdsRtpsDataRxPduId | | |
| Parent Container | DdsRtpsDataRxPdu | | |
| Description | The current pdu local id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00150] | | |
| Parameter Name | DdsRtpsDataRxPduRef | | |
| Parent Container | DdsRtpsDataRxPdu | | |
| Description | The reference to a PDU in the global PDU structure described in the AUTOSAR ECU Configuration Specification. This reference will be used by the Dds module to derive the PDU Id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to Pdu | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

DdsRtpsDataTxPdu

| | | | |
|---|--|---|---------------------|
| SWS Item | [ECUC_Dds_00145] | | |
| Container Name | DdsRtpsDataTxPdu | | |
| Parent Container | DdsDomainParticipantUnicastRtpsPduCollection | | |
| Description | The unicast transmission lower layer pdu used to transmit data from DDS to lower network layer. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | true | | |
| Multiplicity Configuration Class | Pre-compile time | X | VARIANT-PRE-COMPILE |
| | Link time | – | |
| | Post-build time | X | VARIANT-POST-BUILD |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00146] | | |
| Parameter Name | DdsRtpsDataTxPduId | | |
| Parent Container | DdsRtpsDataTxPdu | | |
| Description | The current pdu local id Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00147] | | |
| Parameter Name | DdsRtpsDataTxPduRef | | |
| Parent Container | DdsRtpsDataTxPdu | | |
| Description | The reference to a PDU in the global PDU structure described in the AUTOSAR ECU Configuration Specification. This reference will be used by the Dds module to derive the PDU Id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to Pdu | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

10.2.3.3.1.2 DdsDomainParticipantMulticastRtpsCollection

The [DdsDomainParticipantMulticastRtpsPduCollection](#) container models the pool of all the multicast lower layer PDUs (both Tx and Rx) towards lower network layers.

It is used just to have a unique definition points for all the Multicast lower layer PDUs (it is simply a container of containers).

In the picture below, the UML diagram of [DdsDomainParticipantMulticastRtpsPduCollection](#) container is shown.

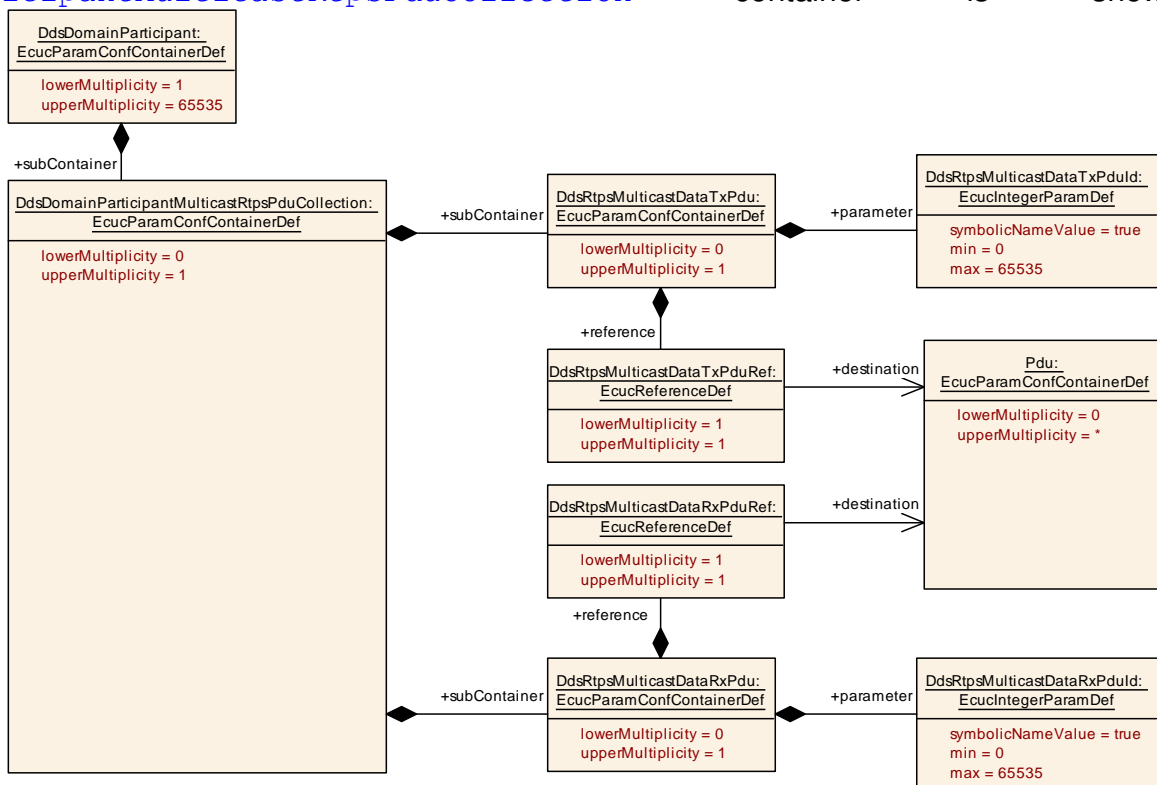


Figure 10.9: DdsDomainParticipantMulticastRtpsPduCollection

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00144] | | |
| Container Name | DdsDomainParticipantMulticastRtpsPduCollection | | |
| Parent Container | DdsDomainParticipant | | |
| Description | The pool of multicast lower layer PDUs towards lower network layers. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|---|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsRtpsMulticastDataRxPdu | 0..1 | The multicast reception lower layer pdu used to send data from the lower network layer to DDS itself. Tags: atp.Status=draft |
| DdsRtpsMulticastDataTxPdu | 0..1 | The multicast lower layer transmission PDU used to transmit data from DDS to lower network layer. Tags: atp.Status=draft |

DdsRtpsMulticastDataTxPdu

| | | | |
|---|--|---|---------------------|
| SWS Item | [ECUC_Dds_00151] | | |
| Container Name | DdsRtpsMulticastDataTxPdu | | |
| Parent Container | DdsDomainParticipantMulticastRtpsPduCollection | | |
| Description | The multicast lower layer transmission PDU used to transmit data from DDS to lower network layer. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | true | | |
| Multiplicity Configuration Class | Pre-compile time | X | VARIANT-PRE-COMPILE |
| | Link time | – | |
| | Post-build time | X | VARIANT-POST-BUILD |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00152] | | |
| Parameter Name | DdsRtpsMulticastDataTxPduId | | |
| Parent Container | DdsRtpsMulticastDataTxPdu | | |
| Description | The current pdu local id Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|---------------------------------|--|--|--|
| SWS Item | [ECUC_Dds_00153] | | |
| Parameter Name | DdsRtpsMulticastDataTxPduRef | | |
| Parent Container | DdsRtpsMulticastDataTxPdu | | |
| Description | The reference to a PDU in the global PDU structure described in the AUTOSAR ECU Configuration Specification. This reference will be used by the Dds module to derive the PDU Id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to Pdu | | |
| Post-Build Variant Value | false | | |





| | | | |
|----------------------------------|-------------------------|---|--------------|
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

DdsRtpsMulticastDataRxPdu

| | | | |
|---|--|---|---------------------|
| SWS Item | [ECUC_Dds_00154] | | |
| Container Name | DdsRtpsMulticastDataRxPdu | | |
| Parent Container | DdsDomainParticipantMulticastRtpsPduCollection | | |
| Description | The multicast reception lower layer pdu used to send data from the lower network layer to DDS itself. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | true | | |
| Multiplicity Configuration Class | Pre-compile time | X | VARIANT-PRE-COMPILE |
| | Link time | – | |
| | Post-build time | X | VARIANT-POST-BUILD |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00155] | | |
| Parameter Name | DdsRtpsMulticastDataRxPduId | | |
| Parent Container | DdsRtpsMulticastDataRxPdu | | |
| Description | The current pdu local id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|---------------------------------|--|--|--|
| SWS Item | [ECUC_Dds_00156] | | |
| Parameter Name | DdsRtpsMulticastDataRxPduRef | | |
| Parent Container | DdsRtpsMulticastDataRxPdu | | |
| Description | The reference to a PDU in the global PDU structure described in the AUTOSAR ECU Configuration Specification. This reference will be used by the Dds module to derive the PDU Id. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to Pdu | | |
| Post-Build Variant Value | false | | |





| | | | |
|----------------------------------|-------------------------|---|--------------|
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.3.1.3 DdsDomainParticipantQoS

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00013] | | |
| Container Name | DdsDomainParticipantQoS | | |
| Parent Container | DdsDomainParticipant | | |
| Description | This container represents the configuration of QoS supported by the Dds Domain Participant. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------------|---------------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsEntityFactory | 0..1 | If present, this container indicates that Dds ENTITY_FACTORY QoS is supported by this DomainParticipant. Tags: atp.Status=draft |
| DdsUserData | 0..1 | If present, this container indicates that Dds USER_DATA QoS is supported by this DomainParticipant. Tags: atp.Status=draft |

DdsUserData For description of this subcontainer, please refer to [paragraph 10.2.3.4.1](#)

DdsEntityFactory For description of this subcontainer, please refer to [paragraph 10.2.3.4.20](#)

10.2.3.3.1.4 DdsDomainParticipantCryptoInfo

In the picture below, the UML diagram of DdsDomainParticipantCryptoInfo container is shown

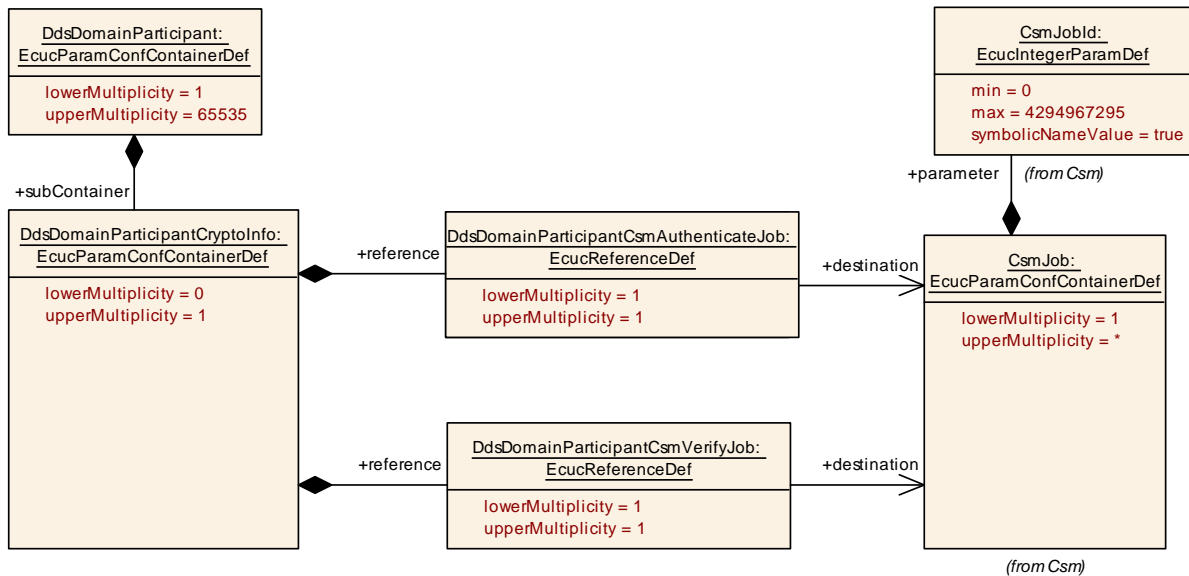


Figure 10.10: Dds DomainParticipant Crypto Info

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00015] | | |
| Container Name | DdsDomainParticipantCryptoInfo | | |
| Parent Container | DdsDomainParticipant | | |
| Description | This container contains the configuration of the Crypto service to be used by Entities belonging to this DomainParticipant. If it is not present, it means that not security mechanism is supported. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Configuration Parameters | | | |

| | | | |
|---------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00020] | | |
| Parameter Name | DdsDomainParticipantCsmAuthenticateJob | | |
| Parent Container | DdsDomainParticipantCryptoInfo | | |
| Description | The reference to the CSM job to be used to authenticate data. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to CsmJob | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00021] | | |
| Parameter Name | DdsDomainParticipantCsmVerifyJob | | |
| Parent Container | DdsDomainParticipantCryptoInfo | | |
| Description | The reference to the CSM job to be used to verify data. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to CsmJob | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.3.1.5 DdsDataSender

The [DdsDataSender](#) is used to model a DdsWriter linked to a Sender/Receiver interface.

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00157] | | |
| Container Name | DdsDataSender | | |
| Parent Container | DdsDomainParticipant | | |
| Description | Container useful to usability: it defines a DDS DataWriter linked to a Sender/Receiver Interface. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00158] | | |
| Parameter Name | DdsSenderDataWriterRef | | |
| Parent Container | DdsDataSender | | |
| Description | Reference to the dataWriter used by the sender Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to DdsDataWriter | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.3.1.6 DdsDataReceiver

The [DdsDataReceiver](#) is used to model a DdsReader linked to a Sender/Receiver interface.

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00159] | | |
| Container Name | DdsDataReceiver | | |
| Parent Container | DdsDomainParticipant | | |
| Description | Container useful to usability: it defines a DDS DataReader linked to a Sender/Receiver Interface. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00160] | | |
| Parameter Name | DdsReceiverDataReaderRef | | |
| Parent Container | DdsDataReceiver | | |
| Description | Reference to the dataReader used by the receiver Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to DdsDataReader | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| |
|-------------------------------|
| No Included Containers |
|-------------------------------|

10.2.3.3.1.7 DdsPublisher

In the picture below, the UML diagram of DdsPublisher container is shown

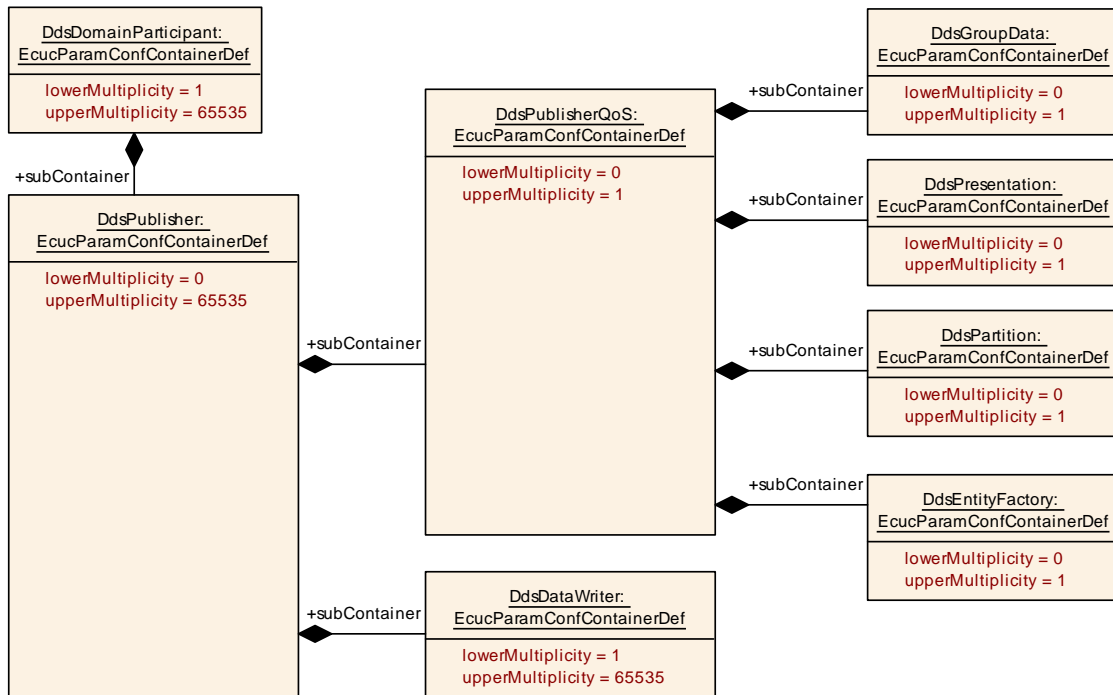


Figure 10.11: Dds Publisher

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00016] | | |
| Container Name | DdsPublisher | | |
| Parent Container | DdsDomainParticipant | | |
| Description | This container represents the configuration of one Publisher. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|---------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDataWriter | 1..65535 | This container represents the configuration of one data writer. One publisher can refer to one or more writer, but a writer can belong to one single publisher. Tags: atp.Status=draft |
| DdsPublisherQoS | 0..1 | This container represents the configuration of QoS Profiles related to the current Dds Publisher. Tags: atp.Status=draft |

DdsPublisherQoS

| | |
|------------------|------------------|
| SWS Item | [ECUC_Dds_00022] |
| Container Name | DdsPublisherQoS |
| Parent Container | DdsPublisher |





| | | | |
|---|--|---|--------------|
| Description | This container represents the configuration of QoS Profiles related to the current Dds Publisher. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------------|---------------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsEntityFactory | 0..1 | If present, this container indicates that Dds ENTITY_FACTORY QoS is supported. Tags: atp.Status=draft |
| DdsGroupData | 0..1 | If present, this container indicates that Dds GROUP_DATA QoS is supported. Tags: atp.Status=draft |
| DdsPartition | 0..1 | If present, this container indicates that Dds PARTITION QoS is supported. Tags: atp.Status=draft |
| DdsPresentation | 0..1 | If present, this container indicates that Dds PRESENTATION QoS is supported. Tags: atp.Status=draft |

DdsGroupData For description of this subcontainer, please refer to [paragraph 10.2.3.4.3](#)

DdsPresentation For description of this subcontainer, please refer to [paragraph 10.2.3.4.6](#)

DdsPartition For description of this subcontainer, please refer to [paragraph 10.2.3.4.13](#)

DdsEntityFactory For description of this subcontainer, please refer to [paragraph 10.2.3.4.20](#)

DdsDataWriter

In the picture below, the UML diagram of [DdsDataWriter](#) container is shown

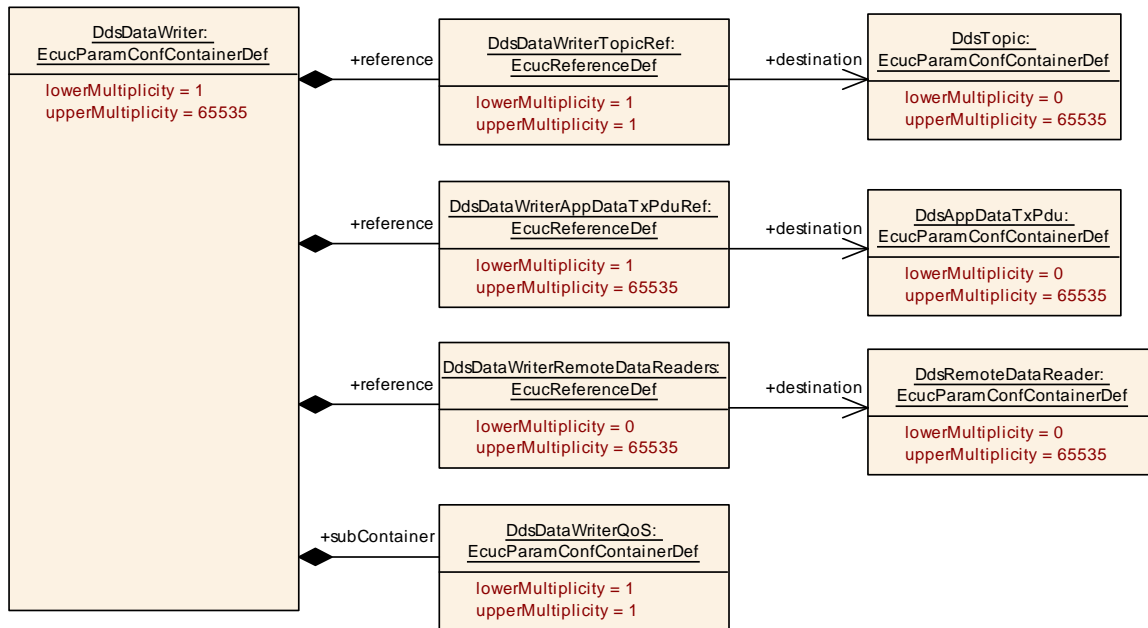


Figure 10.12: Dds DataWriter

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00023] | | |
| Container Name | DdsDataWriter | | |
| Parent Container | DdsPublisher | | |
| Description | This container represents the configuration of one data writer. One publisher can refer to one or more writer, but a writer can belong to one single publisher. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00139] | | |
| Parameter Name | DdsDataWriterAppDataTxPduRef | | |
| Parent Container | DdsDataWriter | | |
| Description | This reference refers to the DdsAppDataTxPdu which is used by the upper layer of the Dds module to transfer data which is requested to be transmitted on the network as DDS serialized data. Tags: atp.Status=draft | | |
| Multiplicity | 1..65535 | | |
| Type | Reference to DdsAppDataTxPdu | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |





| | | | |
|---------------------------|------------------------|---|--|
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00140] | | |
| Parameter Name | DdsDataWriterRemoteDataReaders | | |
| Parent Container | DdsDataWriter | | |
| Description | Reference to the remote DdsDataReaders that the current DdsDataWriters has to send data to. For each remote DdsDataReader configured, the local DdsDataWriter shall send data by using the DdsDataReaderRemotePdu configured for the given remote DataReader. Tags: atp.Status=draft | | |
| Multiplicity | 0..65535 | | |
| Type | Reference to DdsRemoteDataReader | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00029] | | |
| Parameter Name | DdsDataWriterTopicRef | | |
| Parent Container | DdsDataWriter | | |
| Description | This reference selects the Topic on which the current Dds Writer wants to publish. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to DdsTopic | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| Included Containers | | |
|----------------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDataWriterQoS | 1 | This container represents the configuration of QoS Profiles related to the current DdsDataWriter. Tags: atp.Status=draft |

DdsDataWriterQoS

| | |
|-------------------------|---|
| SWS Item | [ECUC_Dds_00028] |
| Container Name | DdsDataWriterQoS |
| Parent Container | DdsDataWriter , DdsRemoteDataWriter |





| | |
|---------------------------------|---|
| Description | This container represents the configuration of QoS Profiles related to the current Dds DataWriter. Tags: atp.Status=draft |
| Configuration Parameters | |

| Included Containers | | |
|------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDeadline | 0..1 | If present, this container indicates that Dds DEADLINE QoS is supported. Tags: atp.Status=draft |
| DdsDestinationOrder | 0..1 | If present, this container indicates that Dds DESTINATION_ORDER QoS is supported. Tags: atp.Status=draft |
| DdsDurability | 0..1 | If present, this container indicates that Dds DURABILITY QoS is supported. Tags: atp.Status=draft |
| DdsDurabilityService | 0..1 | If present, this container indicates that Dds DURABILITY_SERVICE QoS is supported. Tags: atp.Status=draft |
| DdsHistory | 0..1 | If present, this container indicates that Dds HISTORY QoS is supported. Tags: atp.Status=draft |
| DdsLatencyBudget | 0..1 | If present, this container indicates that Dds LATENCY_BUDGET QoS is supported. Tags: atp.Status=draft |
| DdsLifespan | 0..1 | If present, this container indicates that Dds LIFESPAN QoS is supported. Tags: atp.Status=draft |
| DdsLiveliness | 0..1 | If present, this container indicates that Dds LIVELINESS QoS is supported. Tags: atp.Status=draft |
| DdsOwnership | 0..1 | If present, this container indicates that Dds OWNERSHIP QoS is supported. Tags: atp.Status=draft |
| DdsOwnershipStrength | 0..1 | Describes the DDS [1] OWNERSHIP_STRENGTH QoS policy. Tags: atp.Status=draft |
| DdsReliability | 0..1 | If present, this container indicates that Dds RELIABILITY QoS is supported. Tags: atp.Status=draft |
| DdsResourceLimits | 0..1 | If present, this container indicates that Dds RESOURCE_LIMITS QoS is supported. Tags: atp.Status=draft |
| DdsTransportPriority | 0..1 | If present, this container indicates that Dds TRANSPORT_PRIORITY QoS is supported. Tags: atp.Status=draft |
| DdsUserData | 0..1 | If present, this container indicates that Dds USER_DATA QoS is supported. Tags: atp.Status=draft |
| DdsWriterDataLifecycle | 0..1 | Describes the DDS [1] WRITER_DATA_LIFECYCLE QoS policy. Tags: atp.Status=draft |

DdsUserData For description of this subcontainer, please refer to [paragraph 10.2.3.4.1](#)

DdsDurability For description of this subcontainer, please refer to [paragraph 10.2.3.4.4](#)

DdsDurabilityService For description of this subcontainer, please refer to [paragraph 10.2.3.4.5](#)

DdsDeadline For description of this subcontainer, please refer to [paragraph 10.2.3.4.7](#)

DdsLatencyBudget For description of this subcontainer, please refer to [paragraph 10.2.3.4.8](#)

DdsOwnership For description of this subcontainer, please refer to [paragraph 10.2.3.4.9](#)

DdsOwnershipStrength For description of this subcontainer, please refer to [paragraph 10.2.3.4.10](#)

DdsLiveliness For description of this subcontainer, please refer to [paragraph 10.2.3.4.11](#)

DdsReliability For description of this subcontainer, please refer to [paragraph 10.2.3.4.14](#)

DdsTransportPriority For description of this subcontainer, please refer to [paragraph 10.2.3.4.15](#)

DdsLifespan For description of this subcontainer, please refer to [paragraph 10.2.3.4.16](#)

DdsDestinationOrder For description of this subcontainer, please refer to [paragraph 10.2.3.4.17](#)

DdsHistory For description of this subcontainer, please refer to [paragraph 10.2.3.4.18](#)

DdsResourceLimits For description of this subcontainer, please refer to [paragraph 10.2.3.4.19](#)

DdsWriterDataLifecycle For description of this subcontainer, please refer to [paragraph 10.2.3.4.21](#)

10.2.3.3.1.8 DdsSubscriber

In the picture below, the UML diagram of DdsSubscriber container is shown

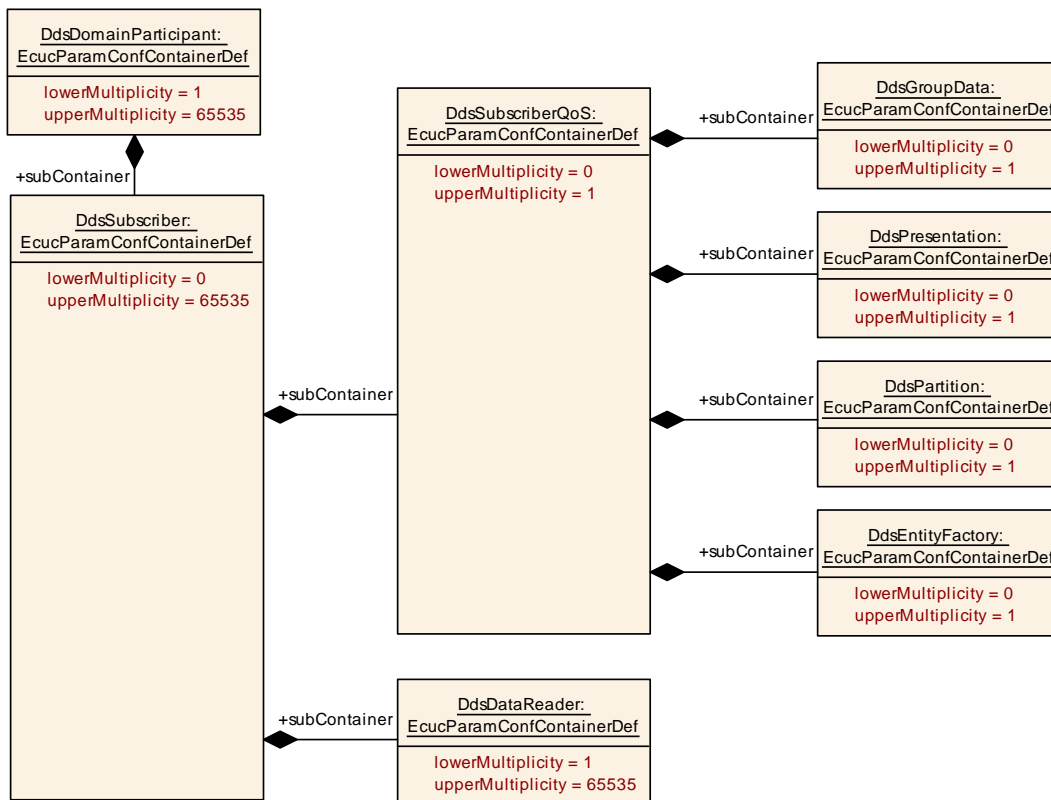


Figure 10.13: Dds Subscriber

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00017] | | |
| Container Name | DdsSubscriber | | |
| Parent Container | DdsDomainParticipant | | |
| Description | This container represents the configuration of a Subscriber. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDataReader | 1..65535 | This container represents the configuration of one data reader. One subscriber can refer to one or more readers, but a reader can belong to one single subscriber. Tags: atp.Status=draft |
| DdsSubscriberQoS | 0..1 | This container represents the configuration of QoS Profiles related to the current Dds Subscriber. Tags: atp.Status=draft |

DdsSubscriberQoS

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00074] | | |
| Container Name | DdsSubscriberQoS | | |
| Parent Container | DdsSubscriber | | |
| Description | This container represents the configuration of QoS Profiles related to the current Dds Subscriber. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|----------------------------------|---------------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsEntityFactory | 0..1 | If present, this container indicates that Dds ENTITY_FACTORY QoS is supported. Tags: atp.Status=draft |
| DdsGroupData | 0..1 | If present, this container indicates that Dds GROUP_DATA QoS is supported. Tags: atp.Status=draft |
| DdsPartition | 0..1 | If present, this container indicates that Dds PARTITION QoS is supported. Tags: atp.Status=draft |
| DdsPresentation | 0..1 | If present, this container indicates that Dds PRESENTATION QoS is supported. Tags: atp.Status=draft |

DdsGroupData For description of this subcontainer, please refer to [paragraph 10.2.3.4.3](#)

DdsPresentation For description of this subcontainer, please refer to [paragraph 10.2.3.4.6](#)

DdsPartition For description of this subcontainer, please refer to [paragraph 10.2.3.4.13](#)

DdsEntityFactory For description of this subcontainer, please refer to [paragraph 10.2.3.4.20](#)

DdsDataReader

In the picture below, the UML diagram of DdsDataReader container is shown

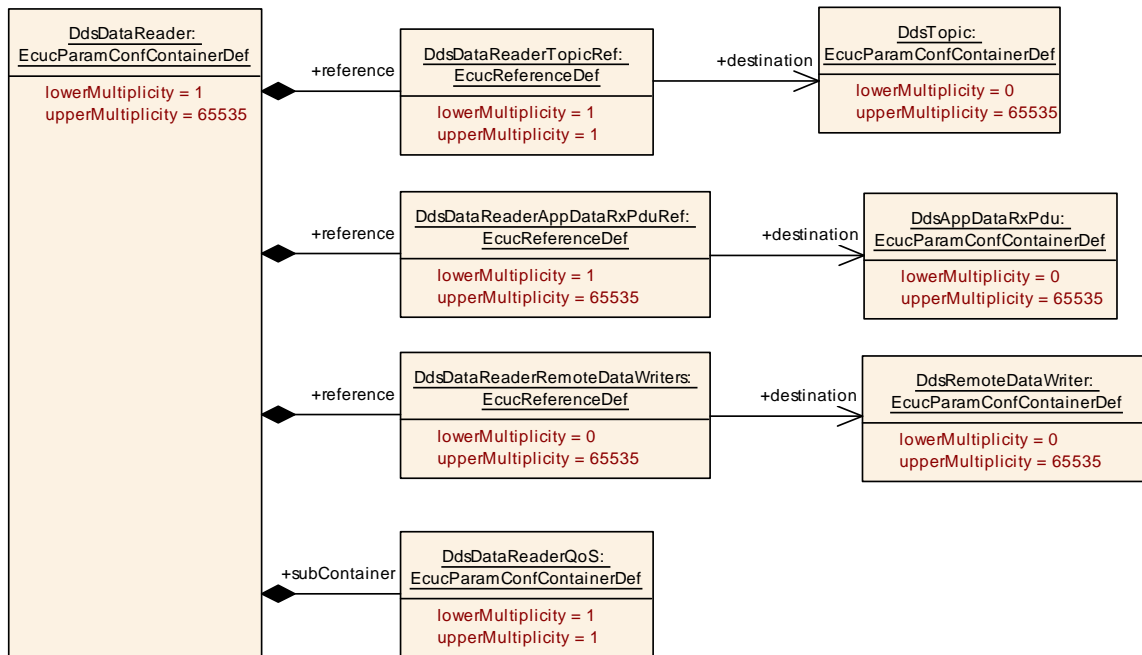


Figure 10.14: Dds DataReader

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00075] | | |
| Container Name | DdsDataReader | | |
| Parent Container | DdsSubscriber | | |
| Description | This container represents the configuration of one data reader. One subscriber can refer to one or more readers, but a reader can belong to one single subscriber. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00141] | | |
| Parameter Name | DdsDataReaderAppDataRxPduRef | | |
| Parent Container | DdsDataReader | | |
| Description | This reference refers to the DdsAppDataRxPdu which is used by Dds module to forward de-serialized DDS data to the upper layer of the DDS module. Tags: atp.Status=draft | | |
| Multiplicity | 1..65535 | | |
| Type | Reference to DdsAppDataRxPdu | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |





| | | | |
|---------------------------|------------------------|---|--|
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00142] | | |
| Parameter Name | DdsDataReaderRemoteDataWriters | | |
| Parent Container | DdsDataReader | | |
| Description | Reference to the remote DdsDataWriters from which the current DdsDataReaders would like to receive data. Data from a remote writer is received by using the DdsRemoteDataWriterPdu referred by the given DdsRemoteDataWriter. Tags: atp.Status=draft | | |
| Multiplicity | 0..65535 | | |
| Type | Reference to DdsRemoteDataWriter | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00076] | | |
| Parameter Name | DdsDataReaderTopicRef | | |
| Parent Container | DdsDataReader | | |
| Description | This reference selects the Topic on which the current Dds Reader wants to publish. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Reference to DdsTopic | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| Included Containers | | |
|----------------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDataReaderQoS | 1 | This container represents the configuration of QoS Profiles related to the current DdsDataReader. Tags: atp.Status=draft |

DdsDataReaderQoS

| | |
|-------------------------|---|
| SWS Item | [ECUC_Dds_00079] |
| Container Name | DdsDataReaderQoS |
| Parent Container | DdsDataReader , DdsRemoteDataReader |





| | |
|---------------------------------|---|
| Description | This container represents the configuration of QoS Profiles related to the current Dds DataReader. Tags: atp.Status=draft |
| Configuration Parameters | |

| Included Containers | | |
|--|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDeadline | 0..1 | If present, this container indicates that Dds DEADLINE QoS is supported. Tags: atp.Status=draft |
| DdsDestinationOrder | 0..1 | If present, this container indicates that Dds DESTINATION_ORDER QoS is supported. Tags: atp.Status=draft |
| DdsHistory | 0..1 | If present, this container indicates that Dds HISTORY QoS is supported. Tags: atp.Status=draft |
| DdsLatencyBudget | 0..1 | If present, this container indicates that Dds LATENCY_BUDGET QoS is supported. Tags: atp.Status=draft |
| DdsLiveliness | 0..1 | If present, this container indicates that Dds LIVELINESS QoS is supported. Tags: atp.Status=draft |
| DdsOwnership | 0..1 | If present, this container indicates that Dds OWNERSHIP QoS is supported. Tags: atp.Status=draft |
| DdsReaderDataLifecycle | 0..1 | Describes the DDS [1] READER_DATA_LIFECYCLE QoS policy. Tags: atp.Status=draft |
| DdsReliability | 0..1 | If present, this container indicates that Dds RELIABILITY QoS is supported. Tags: atp.Status=draft |
| DdsResourceLimits | 0..1 | If present, this container indicates that Dds RESOURCE_LIMITS QoS is supported. Tags: atp.Status=draft |
| DdsTimeBasedFilter | 0..1 | Describes the DDS [1] TIME_BASED_FILTER QoS policy. Tags: atp.Status=draft |
| DdsUserData | 0..1 | If present, this container indicates that Dds USER_DATA QoS is supported. Tags: atp.Status=draft |

DdsUserData For description of this subcontainer, please refer to [paragraph 10.2.3.4.1](#)

DdsDurability For description of this subcontainer, please refer to [paragraph 10.2.3.4.4](#)

DdsDeadline For description of this subcontainer, please refer to [paragraph 10.2.3.4.7](#)

DdsLatencyBudget For description of this subcontainer, please refer to [paragraph 10.2.3.4.8](#)

DdsOwnership For description of this subcontainer, please refer to [paragraph 10.2.3.4.9](#)

DdsLiveliness For description of this subcontainer, please refer to [paragraph 10.2.3.4.11](#)

DdsTimeBasedFilter For description of this subcontainer, please refer to [paragraph 10.2.3.4.12](#)

DdsReliability For description of this subcontainer, please refer to [paragraph 10.2.3.4.14](#)

DdsDestinationOrder For description of this subcontainer, please refer to [paragraph 10.2.3.4.17](#)

DdsHistory For description of this subcontainer, please refer to [paragraph 10.2.3.4.18](#)

DdsResourceLimits For description of this subcontainer, please refer to [paragraph 10.2.3.4.19](#)

DdsReaderDataLifecycle For description of this subcontainer, please refer to [paragraph 10.2.3.4.22](#)

10.2.3.3.1.9 DdsTopic

In the picture below, the UML diagram of DdsTopic container is shown

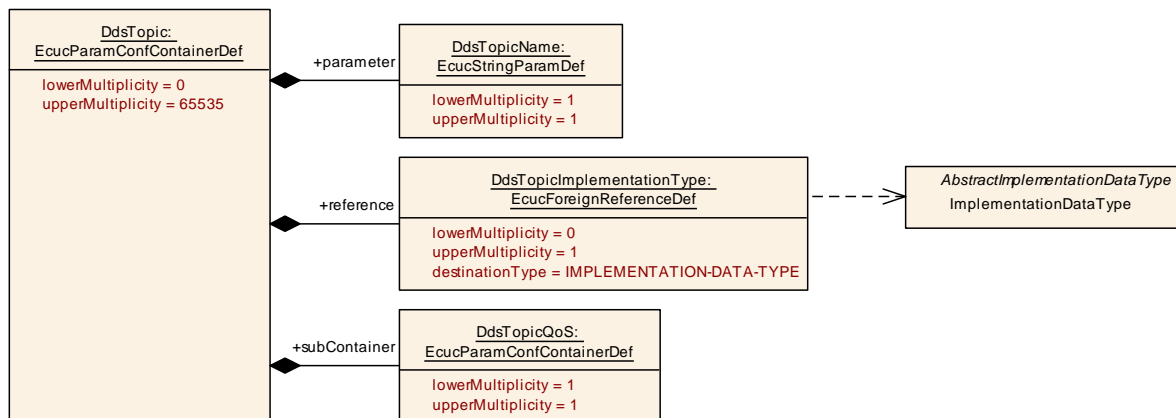


Figure 10.15: Dds Topic

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00018] | | |
| Container Name | DdsTopic | | |
| Parent Container | DdsDomainParticipant | | |
| Description | This container represents the configuration of one Topic. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |





| Configuration Parameters | | | |
|--------------------------|--|--|--|
|--------------------------|--|--|--|

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00103] | | |
| Parameter Name | DdsTopicName | | |
| Parent Container | DdsTopic | | |
| Description | Identify the name of the Topic. Publishers and subscribers intercommunication is based on topic name: only entities that share the same topic can communicate with each other. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucStringParamDef | | |
| Default value | - | | |
| Regular Expression | - | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU dependency: inter-ECU - this value shall be shared between configurations. | | |

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00104] | | |
| Parameter Name | DdsTopicImplementationType | | |
| Parent Container | DdsTopic | | |
| Description | This reference selects the ImplementationDataType the topic is related. A Topic is used to publish a well-defined data type, described by the referenced ImplementationDataType. Tags: atp.Status=draft | | |
| Multiplicity | 0..1 | | |
| Type | Foreign reference to IMPLEMENTATION-DATA-TYPE | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

| Included Containers | | |
|-----------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsTopicQoS | 1 | This container contains the configuration of the QoS supported by the DdsTopic Tags: atp.Status=draft |

DdsTopicQos

| | |
|---------------------------------|---|
| SWS Item | [ECUC_Dds_00102] |
| Container Name | DdsTopicQoS |
| Parent Container | DdsTopic |
| Description | This container contains the configuration of the QoS supported by the DdsTopic Tags: atp.Status=draft |
| Configuration Parameters | |

| Included Containers | | |
|--------------------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDeadline | 0..1 | If present, this container indicates that Dds DEADLINE QoS is supported. Tags: atp.Status=draft |
| DdsDestinationOrder | 0..1 | If present, this container indicates that Dds DESTINATION_ORDER QoS is supported. Tags: atp.Status=draft |
| DdsDurability | 0..1 | If present, this container indicates that Dds DURABILITY QoS is supported. Tags: atp.Status=draft |
| DdsDurabilityService | 0..1 | If present, this container indicates that Dds DURABILITY_SERVICE QoS is supported. Tags: atp.Status=draft |
| DdsHistory | 0..1 | If present, this container indicates that Dds HISTORY QoS is supported. Tags: atp.Status=draft |
| DdsLatencyBudget | 0..1 | If present, this container indicates that Dds LATENCY_BUDGET QoS is supported. Tags: atp.Status=draft |
| DdsLifespan | 0..1 | If present, this container indicates that Dds LIFESPAN QoS is supported. Tags: atp.Status=draft |
| DdsLiveliness | 0..1 | If present, this container indicates that Dds LIVELINESS QoS is supported. Tags: atp.Status=draft |
| DdsOwnership | 0..1 | If present, this container indicates that Dds OWNERSHIP QoS is supported. Tags: atp.Status=draft |
| DdsReliability | 0..1 | If present, this container indicates that Dds RELIABILITY QoS is supported. Tags: atp.Status=draft |
| DdsResourceLimits | 0..1 | If present, this container indicates that Dds RESOURCE_LIMITS QoS is supported. Tags: atp.Status=draft |
| DdsTopicData | 0..1 | Describes the DDS [1] TOPIC_DATA QoS policy. Tags: atp.Status=draft |
| DdsTransportPriority | 0..1 | If present, this container indicates that Dds TRANSPORT_PRIORITY QoS is supported. Tags: atp.Status=draft |

DdsTopicData For description of this subcontainer, please refer to [paragraph 10.2.3.4.2](#)

DdsDurability For description of this subcontainer, please refer to [paragraph 10.2.3.4.4](#)

DdsDurabilityService For description of this subcontainer, please refer to [paragraph 10.2.3.4.5](#)

DdsDeadline For description of this subcontainer, please refer to [paragraph 10.2.3.4.7](#)

DdsLatencyBudget For description of this subcontainer, please refer to [paragraph 10.2.3.4.8](#)

DdsOwnership For description of this subcontainer, please refer to [paragraph 10.2.3.4.9](#)

DdsLiveliness For description of this subcontainer, please refer to [paragraph 10.2.3.4.11](#)

DdsReliability For description of this subcontainer, please refer to [paragraph 10.2.3.4.14](#)

DdsTransportPriority For description of this subcontainer, please refer to [paragraph 10.2.3.4.15](#)

DdsLifespan For description of this subcontainer, please refer to [paragraph 10.2.3.4.16](#)

DdsDestinationOrder For description of this subcontainer, please refer to [paragraph 10.2.3.4.17](#)

DdsHistory For description of this subcontainer, please refer to [paragraph 10.2.3.4.18](#)

DdsResourceLimits For description of this subcontainer, please refer to [paragraph 10.2.3.4.19](#)

10.2.3.3.1.10 DdsRemoteDomainParticipantCollection

The Dds BSW shall support complete static configuration of remotes DdsDomainParticipants of each local DdsDomainParticipant, in order to be able to correctly work also in environments where Dynamic discovery is not supported. The [DdsRemoteDomainParticipant](#) is used to statically configure remote DdsDomainParticipants.

In the picture below, the UML diagram of DdsRemoteDomainParticipant template is shown:

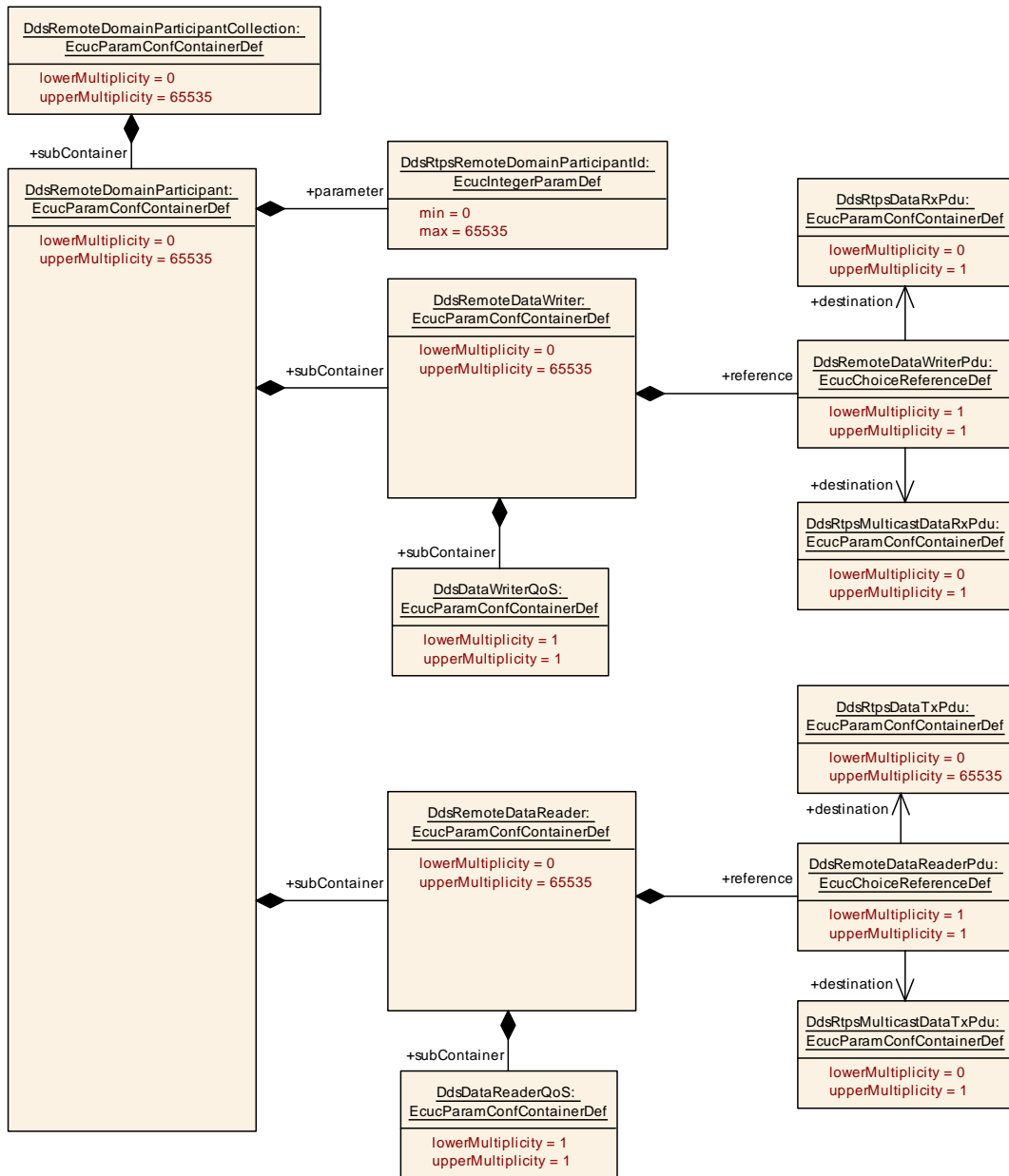


Figure 10.16: DdsRemoteDomainParticipant

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00182] | | |
| Container Name | DdsRemoteDomainParticipantCollection | | |
| Parent Container | DdsDomainParticipant | | |
| Description | Collection of Remote Domain Participants. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| Included Containers | | |
|--|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsRemoteDomainParticipant | 0..65535 | Static configuration of remote endpoints. This container contains information about reachability and QoS parameters of remote endpoints. Tags: atp.Status=draft |

DdsRemoteDomainParticipant

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00161] | | |
| Container Name | DdsRemoteDomainParticipant | | |
| Parent Container | DdsRemoteDomainParticipantCollection | | |
| Description | Static configuration of remote endpoints. This container contains information about reachability and QoS parameters of remote endpoints. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|---------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00162] | | |
| Parameter Name | DdsRtpsRemoteDomainParticipantId | | |
| Parent Container | DdsRemoteDomainParticipant | | |
| Description | The DomainParticipant ID of the remote DDS node Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65535 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| Included Containers | | |
|-------------------------------------|--------------|---|
| Container Name | Multiplicity | Scope / Dependency |
| DdsRemoteDataReader | 0..65535 | The configuration of a specific remote DataReader. Tags: atp.Status=draft |
| DdsRemoteDataWriter | 0..65535 | The configuration of a specific remote DataWriter. Tags: atp.Status=draft |

DdsRemoteDataWriter

The [DdsRemoteDataWriter](#) container is used to configure remotes [DdsDataWriters](#) for a given local [DdsDataReader](#). The **DdsRemoteDataWriterPdu** is the lower layer pdu to be used by the local [DdsDataReader](#) to receive data from the referred [DdsRemoteDataWriter](#).

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00163] | | |
| Container Name | DdsRemoteDataWriter | | |
| Parent Container | DdsRemoteDomainParticipant | | |
| Description | The configuration of a specific remote DataWriter. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|---------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00164] | | |
| Parameter Name | DdsRemoteDataWriterPdu | | |
| Parent Container | DdsRemoteDataWriter | | |
| Description | The Pdu used to receive data from the given remote DataWriter. It could refer both a unicast and a multicast Pdu Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Choice reference to [DdsRtpsDataRxPdu , DdsRtpsMulticastDataRxPdu] | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| Included Containers | | |
|----------------------------------|--------------|--|
| Container Name | Multiplicity | Scope / Dependency |
| DdsDataWriterQoS | 1 | This container represents the configuration of QoS Profiles related to the current DdsDataWriter. Tags: atp.Status=draft |

DdsRemoteDataReader

The [DdsRemoteDataReader](#) container is used to configure remotes DdsDataReaders for a given local DdsDataWriter. The **DdsRemoteDataReaderPdu** is the lower layer pdu to be used by the local [DdsDataWriter](#) to transmit data to the referred [DdsRemoteDataReader](#).

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00165] | | |
| Container Name | DdsRemoteDataReader | | |
| Parent Container | DdsRemoteDomainParticipant | | |
| Description | The configuration of a specific remote DataReader. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |





| Configuration Parameters | | | |
|----------------------------------|--|--|--------------|
| SWS Item | [ECUC_Dds_00166] | | |
| Parameter Name | DdsRemoteDataReaderPdu | | |
| Parent Container | DdsRemoteDataReader | | |
| Description | The Pdu used to transmit data to the given remote DataReader. It could refer both a unicast and a multicast Pdu Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | Choice reference to [DdsRtpsDataTxPdu , DdsRtpsMulticastDataTxPdu] | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |
| Included Containers | | | |
| Container Name | Multiplicity | Scope / Dependency | |
| DdsDataReaderQoS | 1 | This container represents the configuration of QoS Profiles related to the current DdsDataReader. Tags: atp.Status=draft | |

10.2.3.4 DdsQoSPolicies

Note: This chapter is intended to describe all the possible QoS policies. Each of them can be applied only to specific entity types.

The container DdsQoSPolicies does not exist actually, there is a specific Dds<Entity_type>QoS subcontainer for each entity type that supports QoS policies. For each entity type, in the related chapter, the correct Dds<Entity_type>QoS is described.

Note: For description of specific QoS policies, refer to "Supported QoS" chapter of DDS OMG specification ([1]).

10.2.3.4.1 DdsUserData

[CP_SWS_Dds_01001]{DRAFT} DDS USER_DATA semantics [If DdsUserData (the container used for DDS USER_DATA QoS policy) is configured for a specific entity (DdsDomainParticipants, DdsDataReaders or DdsDataWriters), the Dds BSW shall provide user defined information for this entity to other entities in the same DdsDomainParticipant. User data information would be distributed in the context of a DomainParticipant only by means of build-in topics, not with every exchanged message.

The DdsUserDataValue buffer shall be statically configured according an external agreement between parties and it will be never modified at runtime. Being statically configured and not accessible from the application, which can not modify its content, no API is required.

Note: the configuration and meaning of USER_DATA QoS is vendor specific, it can be used to exchange any kind of information between entities. For any details on this QoS topic, the "USER_DATA" chapter of [1] shall be taken as reference.

|(FO_RS_Dds_00005)

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00019] | | |
| Container Name | DdsUserData | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsDomainParticipantQoS | | |
| Description | Describes the DDS [1] USER_DATA QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00124] | | |
| Parameter Name | DdsUserDataValue | | |
| Parent Container | DdsUserData | | |
| Description | See "USER_DATA" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucStringParamDef | | |
| Default value | – | | |
| Regular Expression | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.2 DdsTopicData

| | | | |
|-------------------------|-----------------------------|--|--|
| SWS Item | [ECUC_Dds_00106] | | |
| Container Name | DdsTopicData | | |
| Parent Container | DdsTopicQoS | | |





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|---|---|---|--------------|
| Description | Describes the DDS [1] TOPIC_DATA QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00126] | | |
| Parameter Name | DdsTopicDataValue | | |
| Parent Container | DdsTopicData | | |
| Description | See "TOPIC_DATA" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucStringParamDef | | |
| Default value | – | | |
| Regular Expression | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| No Included Containers |
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10.2.3.4.3 DdsGroupData

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|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00024] | | |
| Container Name | DdsGroupData | | |
| Parent Container | DdsPublisherQoS , DdsSubscriberQoS | | |
| Description | Describes the DDS [1] GROUP_DATA QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|-------------------------|---|--|--|
| SWS Item | [ECUC_Dds_00125] | | |
| Parameter Name | DdsGroupDataValue | | |
| Parent Container | DdsGroupData | | |
| Description | See "GROUP_DATA" chapter of DDS [1]. Tags: atp.Status=draft | | |





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|----------------------------------|-------------------------|---|--------------|
| Multiplicity | 1 | | |
| Type | EcucStringParamDef | | |
| Default value | – | | |
| Regular Expression | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| No Included Containers |
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10.2.3.4.4 DdsDurability

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|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00034] | | |
| Container Name | DdsDurability | | |
| Parent Container | DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] DURABILITY QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00035] | | |
| Parameter Name | DdsDurabilityKind | | |
| Parent Container | DdsDurability | | |
| Description | See "DURABILITY" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | PERSISTENT | See "DURABILITY" chapter of DDS[1]. Tags: atp.Status=draft | |
| | TRANSIENT | See "DURABILITY" chapter of DDS [1]. Tags: atp.Status=draft | |
| | TRANSIENT_LOCAL | See "DURABILITY" chapter of DDS [1]. Tags: atp.Status=draft | |
| | VOLATILE | See "DURABILITY" chapter of DDS [1]. Tags: atp.Status=draft | |
| Default value | VOLATILE | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |





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|---------------------------|------------------------|---|--|
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| No Included Containers |
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10.2.3.4.5 DdsDurabilityService

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|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00036] | | |
| Container Name | DdsDurabilityService | | |
| Parent Container | DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] DURABILITY_SERVICE QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00037] | | |
| Parameter Name | DdsDurabilityServiceCleanupDelay | | |
| Parent Container | DdsDurabilityService | | |
| Description | See "DURABILITY_SERVICE" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|-------------------------|---|--|--|
| SWS Item | [ECUC_Dds_00119] | | |
| Parameter Name | DdsDurabilityServiceHistoryDepth | | |
| Parent Container | DdsDurabilityService | | |
| Description | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |





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|----------------------------------|-------------------------|---|--------------|
| Default value | 1 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00038] | | |
| Parameter Name | DdsDurabilityServiceHistoryKind | | |
| Parent Container | DdsDurabilityService | | |
| Description | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | KEEP_ALL | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | |
| | KEEP_LAST | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | |
| Default value | KEEP_LAST | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00121] | | |
| Parameter Name | DdsDurabilityServiceMaxInstances | | |
| Parent Container | DdsDurabilityService | | |
| Description | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|-------------------------|--------------------------------------|--|--|
| SWS Item | [ECUC_Dds_00120] | | |
| Parameter Name | DdsDurabilityServiceMaxSamples | | |
| Parent Container | DdsDurabilityService | | |





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| Description | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | - | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00122] | | |
| Parameter Name | DdsDurabilityServiceMaxSamplesPerInstance | | |
| Parent Container | DdsDurabilityService | | |
| Description | See "DURABILITY_SERVICE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | - | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.6 DdsPresentation

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|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00025] | | |
| Container Name | DdsPresentation | | |
| Parent Container | DdsPublisherQoS , DdsSubscriberQoS | | |
| Description | Describes the DDS [1] PRESENTATION QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00069] | | |
| Parameter Name | DdsPresentationAccessScope | | |
| Parent Container | DdsPresentation | | |
| Description | See "PRESENTATION" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | GROUP | See "PRESENTATION" chapter of DDS [1]. Tags: atp.Status=draft | |
| | INSTANCE | See "PRESENTATION" chapter of DDS [1]. Tags: atp.Status=draft | |
| | TOPIC | See "PRESENTATION" chapter of DDS [1]. Tags: atp.Status=draft | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00070] | | |
| Parameter Name | DdsPresentationCoherentAccess | | |
| Parent Container | DdsPresentation | | |
| Description | See "PRESENTATION" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucBooleanParamDef | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00071] | | |
| Parameter Name | DdsPresentationOrderedAccess | | |
| Parent Container | DdsPresentation | | |
| Description | See "PRESENTATION" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucBooleanParamDef | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

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| No Included Containers |
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10.2.3.4.7 DdsDeadline

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|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00039] | | |
| Container Name | DdsDeadline | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] DEADLINE QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00040] | | |
| Parameter Name | DdsDeadlinePeriod | | |
| Parent Container | DdsDeadline | | |
| Description | See "DEADLINE" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.8 DdsLatencyBudget

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00041] | | |
| Container Name | DdsLatencyBudget | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] LATENCY_BUDGET QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00042] | | |
| Parameter Name | DdsLatencyBudgetDuration | | |
| Parent Container | DdsLatencyBudget | | |
| Description | See "LATENCY_BUDGET" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | - | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.9 DdsOwnership

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00043] | | |
| Container Name | DdsOwnership | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] OWNERSHIP QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | - | |
| | Post-build time | - | |
| Configuration Parameters | | | |

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|-------------------------|--|--|--|
| SWS Item | [ECUC_Dds_00044] | | |
| Parameter Name | DdsOwnershipKind | | |
| Parent Container | DdsOwnership | | |
| Description | See "OWNERSHIP" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | EXCLUSIVE | See "OWNERSHIP" chapter of DDS [1]. Tags: atp.Status=draft | |
| | SHARED | See "OWNERSHIP" chapter of DDS [1]. Tags: atp.Status=draft | |
| Default value | SHARED | | |





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| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.10 DdsOwnershipStrength

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00045] | | |
| Container Name | DdsOwnershipStrength | | |
| Parent Container | DdsDataWriterQoS | | |
| Description | Describes the DDS [1] OWNERSHIP_STRENGTH QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00046] | | |
| Parameter Name | DdsOwnershipStrengthValue | | |
| Parent Container | DdsOwnershipStrength | | |
| Description | See "OWNERSHIP_STRENGTH" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 0 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.11 DdsLiveliness

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00047] | | |
| Container Name | DdsLiveliness | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] LIVELINESS QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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| SWS Item | [ECUC_Dds_00049] | | |
| Parameter Name | DdsLivelinessLeaseDuration | | |
| Parent Container | DdsLiveliness | | |
| Description | See "LIVELINESS" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| SWS Item | [ECUC_Dds_00048] | | |
| Parameter Name | DdsLivenessKind | | |
| Parent Container | DdsLiveliness | | |
| Description | See "LIVELINESS" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | AUTOMATIC | See "LIVELINESS" chapter of DDS [1]. Tags: atp.Status=draft | |
| | MANUAL_BY_PARTICIPANT | See "LIVELINESS" chapter of DDS [1]. Tags: atp.Status=draft | |
| | MANUAL_BY_TOPIC | See "LIVELINESS" chapter of DDS [1]. Tags: atp.Status=draft | |
| Default value | AUTOMATIC | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |





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| Scope / Dependency | scope: ECU |
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| No Included Containers |
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10.2.3.4.12 DdsTimeBasedFilter

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|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00087] | | |
| Container Name | DdsTimeBasedFilter | | |
| Parent Container | DdsDataReaderQoS | | |
| Description | Describes the DDS [1] TIME_BASED_FILTER QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|---------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00088] | | |
| Parameter Name | DdsTimeBasedFilterMinimumSeparation | | |
| Parent Container | DdsTimeBasedFilter | | |
| Description | See "TIME_BASED_FILTER" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| No Included Containers |
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10.2.3.4.13 DdsPartition

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| SWS Item | [ECUC_Dds_00026] | | |
| Container Name | DdsPartition | | |
| Parent Container | DdsPublisherQoS , DdsSubscriberQoS | | |





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|---|--|---|--------------|
| Description | Describes the DDS [1] PARTITION QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00072] | | |
| Parameter Name | DdsPartitionName | | |
| Parent Container | DdsPartition | | |
| Description | See "PARTITION" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1..65534 | | |
| Type | EcucStringParamDef | | |
| Default value | – | | |
| Regular Expression | – | | |
| Post-Build Variant Multiplicity | false | | |
| Post-Build Variant Value | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| No Included Containers |
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10.2.3.4.14 DdsReliability

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|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00050] | | |
| Container Name | DdsReliability | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] RELIABILITY QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

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|----------------------------------|--|--|--------------|
| SWS Item | [ECUC_Dds_00051] | | |
| Parameter Name | DdsReliabilityKind | | |
| Parent Container | DdsReliability | | |
| Description | See "RELIABILITY" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | BEST_EFFORT | See "RELIABILITY" chapter of DDS [1]. Tags: atp.Status=draft | |
| | RELIABLE | See "RELIABILITY" chapter of DDS [1]. Tags: atp.Status=draft | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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| SWS Item | [ECUC_Dds_00052] | | |
| Parameter Name | DdsReliabilityMaxBlockingTime | | |
| Parent Container | DdsReliability | | |
| Description | See "RELIABILITY" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |
| Range | [0 .. 65.534] | | |
| Default value | 0.1 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.15 DdsTransportPriority

| | | | |
|--|---|--|--|
| SWS Item | [ECUC_Dds_00053] | | |
| Container Name | DdsTransportPriority | | |
| Parent Container | DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] TRANSPORT_PRIORITY QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |





| | | | |
|---|-------------------------|---|--------------|
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00054] | | |
| Parameter Name | DdsTransportPriorityValue | | |
| Parent Container | DdsTransportPriority | | |
| Description | See "TRANSPORT_PRIORITY" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 0 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|-------------------------------|
| No Included Containers |
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10.2.3.4.16 DdsLifespan

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00055] | | |
| Container Name | DdsLifespan | | |
| Parent Container | DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] LIFESPAN QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|-------------------------|---|--|--|
| SWS Item | [ECUC_Dds_00056] | | |
| Parameter Name | DdsLifespanDuration | | |
| Parent Container | DdsLifespan | | |
| Description | See "LIFESPAN" chapter of DDS [1]. Time given in seconds. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucFloatParamDef | | |





| | | | |
|----------------------------------|-------------------------|---|--------------|
| Range | [0 .. 65.534] | | |
| Default value | – | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.17 DdsDestinationOrder

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00057] | | |
| Container Name | DdsDestinationOrder | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] DESTINATION_ORDER QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|--|--------------|
| SWS Item | [ECUC_Dds_00058] | | |
| Parameter Name | DdsDestinationOrderKind | | |
| Parent Container | DdsDestinationOrder | | |
| Description | See "DESTINATION_ORDER" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | BY_RECEPTION_TIMESTAMP | See "DESTINATION_ORDER" chapter of DDS [1]. Tags: atp.Status=draft | |
| | BY_SOURCE_TIMESTAMP | See "DESTINATION_ORDER" chapter of DDS [1]. Tags: atp.Status=draft | |
| Default value | BY_RECEPTION_TIMESTAMP | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.18 DdsHistory

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00059] | | |
| Container Name | DdsHistory | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] HISTORY QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|--|--------------|
| SWS Item | [ECUC_Dds_00060] | | |
| Parameter Name | DdsHistoryKind | | |
| Parent Container | DdsHistory | | |
| Description | See "HISTORY" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucEnumerationParamDef | | |
| Range | KEEP_ALL | See "HISTORY" chapter of DDS [1]. Tags: atp.Status=draft | |
| | KEEP_LAST | See "HISTORY" chapter of DDS [1]. Tags: atp.Status=draft | |
| Default value | KEEP_LAST | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00063] | | |
| Parameter Name | DdsHistoryOrderDepth | | |
| Parent Container | DdsHistory | | |
| Description | See "HISTORY" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 1 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|-------------------------------|
| No Included Containers |
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10.2.3.4.19 DdsResourceLimits

| | | | |
|---|---|---|--------------|
| SWS Item | [ECUC_Dds_00061] | | |
| Container Name | DdsResourceLimits | | |
| Parent Container | DdsDataReaderQoS , DdsDataWriterQoS , DdsTopicQoS | | |
| Description | Describes the DDS [1] RESOURCE_LIMITS QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00064] | | |
| Parameter Name | DdsResouceLimitsMaxInstances | | |
| Parent Container | DdsResourceLimits | | |
| Description | See "RESOURCE_LIMITS" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 65534 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00062] | | |
| Parameter Name | DdsResouceLimitsMaxSamples | | |
| Parent Container | DdsResourceLimits | | |
| Description | See "RESOURCE_LIMITS" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 65534 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|-------------------------|---------------------------------------|--|--|
| SWS Item | [ECUC_Dds_00065] | | |
| Parameter Name | DdsResouceLimitsMaxSamplesPerInstance | | |
| Parent Container | DdsResourceLimits | | |





| | | | |
|----------------------------------|--|---|--------------|
| Description | See "RESOURCE_LIMITS" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 65534 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

No Included Containers

10.2.3.4.20 DdsEntityFactory

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00027] | | |
| Container Name | DdsEntityFactory | | |
| Parent Container | DdsDomainParticipantQoS , DdsPublisherQoS , DdsSubscriberQoS | | |
| Description | Describes the DDS [1] ENTITY_FACTORY QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|---|---|--------------|
| SWS Item | [ECUC_Dds_00073] | | |
| Parameter Name | DdsEntityFactoryAutoenableCreatedEntities | | |
| Parent Container | DdsEntityFactory | | |
| Description | See "ENTITY_FACTORY" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucBooleanParamDef | | |
| Default value | true | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

No Included Containers

10.2.3.4.21 DdsWriterDataLifecycle

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00066] | | |
| Container Name | DdsWriterDataLifecycle | | |
| Parent Container | DdsDataWriterQoS | | |
| Description | Describes the DDS [1] WRITER_DATA_LIFECYCLE QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00067] | | |
| Parameter Name | DdsAutodisposeUnregisteredInstances | | |
| Parent Container | DdsWriterDataLifecycle | | |
| Description | See "WRITER_DATA_LIFECYCLE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucBooleanParamDef | | |
| Default value | true | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: local | | |

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|-------------------------------|
| No Included Containers |
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10.2.3.4.22 DdsReaderDataLifecycle

| | | | |
|---|--|---|--------------|
| SWS Item | [ECUC_Dds_00095] | | |
| Container Name | DdsReaderDataLifecycle | | |
| Parent Container | DdsDataReaderQoS | | |
| Description | Describes the DDS [1] READER_DATA_LIFECYCLE QoS policy. Tags: atp.Status=draft | | |
| Post-Build Variant Multiplicity | false | | |
| Multiplicity Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Configuration Parameters | | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00097] | | |
| Parameter Name | DdsAutopurgeDisposedSamplesDelay | | |
| Parent Container | DdsReaderDataLifecycle | | |
| Description | See "READER_DATA_LIFECYCLE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 65534 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

| | | | |
|----------------------------------|--|---|--------------|
| SWS Item | [ECUC_Dds_00096] | | |
| Parameter Name | DdsAutopurgeNowriterSamplesDelay | | |
| Parent Container | DdsReaderDataLifecycle | | |
| Description | See "READER_DATA_LIFECYCLE" chapter of DDS [1]. Tags: atp.Status=draft | | |
| Multiplicity | 1 | | |
| Type | EcucIntegerParamDef | | |
| Range | 0 .. 65534 | | |
| Default value | 65534 | | |
| Post-Build Variant Value | false | | |
| Value Configuration Class | Pre-compile time | X | All Variants |
| | Link time | – | |
| | Post-build time | – | |
| Scope / Dependency | scope: ECU | | |

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|-------------------------------|
| No Included Containers |
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10.3 Published Information

For details refer to the chapter 10.3 “Published Information” in SWS_BSWGeneral.

A Not applicable requirements

Na

B Change history of AUTOSAR traceable items

Please note that the lists in this chapter also include traceable items that have been removed from the specification in a later version. These items do not appear as hyperlinks in the document.

B.1 Traceable item history of this document according to AUTOSAR Release R22-11

B.1.1 Added Specification Items in R22-11

| Number | Heading |
|-------------------------------------|--|
| [CP_SWS_Dds_-00726] | RTPS compliance |
| [CP_SWS_Dds_-00727] | DDS standard serialization/deserialization rules |
| [CP_SWS_Dds_-00728] | DDS serialization of primitive types |
| [CP_SWS_Dds_-00729] | DDS serialization of enumeration data types |
| [CP_SWS_Dds_-00730] | DDS serialization of ARRAY data type |
| [CP_SWS_Dds_-00731] | DDS serialization of STRUCTURE data type |
| [CP_SWS_Dds_-00734] | DDS Data serialization |
| [CP_SWS_Dds_-00735] | Encoding Format and Endianness of Strings in DDS |
| [CP_SWS_Dds_-00750] | DDS-security |
| [CP_SWS_Dds_-00752] | MAC usage |
| [CP_SWS_Dds_-00753] | CSM library usage |
| [CP_SWS_Dds_-00756] | MAC calculation failure |
| [CP_SWS_Dds_-00758] | MAC check failure |
| [CP_SWS_Dds_-00761] | Repetition or Insertion of Information |
| [CP_SWS_Dds_-00762] | Loss or Incorrect sequence of Information |





| Number | Heading |
|---------------------|---------------------------------------|
| [CP_SWS_Dds_-00763] | Delay of Information |
| [CP_SWS_Dds_-00766] | Corruption of Information |
| [CP_SWS_Dds_-00769] | CRC check failure |
| [CP_SWS_Dds_-00772] | |
| [CP_SWS_Dds_-00773] | |
| [CP_SWS_Dds_-00801] | |
| [CP_SWS_Dds_-00802] | |
| [CP_SWS_Dds_-00810] | |
| [CP_SWS_Dds_-00811] | Dds_Init behaviour |
| [CP_SWS_Dds_-00812] | Dds_Init - Entity state |
| [CP_SWS_Dds_-00813] | Dds_Init - Buffer state |
| [CP_SWS_Dds_-00820] | |
| [CP_SWS_Dds_-00821] | Dds_GetVersion - Null VersionInfoPtr |
| [CP_SWS_Dds_-00823] | |
| [CP_SWS_Dds_-00824] | |
| [CP_SWS_Dds_-00825] | Dds_RxMainFunction |
| [CP_SWS_Dds_-00826] | Dds_RxMainFunction - Error conditions |
| [CP_SWS_Dds_-00827] | Dds_RxMainFunction - OK conditions |
| [CP_SWS_Dds_-00828] | Dds_TxMainFunction |
| [CP_SWS_Dds_-00829] | Dds_TxMainFunction - Error conditions |
| [CP_SWS_Dds_-00830] | Dds_TxMainFunction - OK conditions |
| [CP_SWS_Dds_-00831] | |





| Number | Heading |
|----------------------------|--|
| [CP_SWS_Dds_-00832] | |
| [CP_SWS_Dds_-00833] | |
| [CP_SWS_Dds_-00835] | |
| [CP_SWS_Dds_-00841] | |
| [CP_SWS_Dds_-00843] | |
| [CP_SWS_Dds_-00851] | Internal transmission buffer presence |
| [CP_SWS_Dds_-00852] | Dds_Transmit - Error conditions |
| [CP_SWS_Dds_-00854] | Dds_Transmit - DDS_E_U_PDUID_REJECTED |
| [CP_SWS_Dds_-00855] | Dds_Transmit - E_OK |
| [CP_SWS_Dds_-00861] | Dds_RxIndication - Error conditions |
| [CP_SWS_Dds_-00862] | Dds_RxIndication - DDS_E_L_PDUID_IGNORED |
| [CP_SWS_Dds_-00863] | Dds_RxIndication - OK condition |
| [CP_SWS_Dds_-00864] | Internal reception buffer presence |
| [CP_SWS_Dds_-00871] | Dds_TxConfirmation - Error conditions |
| [CP_SWS_Dds_-00872] | Dds_TxConfirmation behaviour |
| [CP_SWS_Dds_-00881] | Dds_TriggerTransmit - Error conditions |
| [CP_SWS_Dds_-00882] | Dds_TriggerTransmit behaviour |
| [CP_SWS_Dds_-00883] | Dds_TriggerTransmit - Error conditions |
| [CP_SWS_Dds_-00884] | Dds_TriggerTransmit limitation |
| [CP_SWS_Dds_-01001] | DDS USER_DATA semantics |
| [CP_SWS_Dds_-CONSTR_00712] | Topic name uniqueness |
| [CP_SWS_Dds_-CONSTR_00725] | No data serialization |





| Number | Heading |
|----------------------------|--|
| [CP_SWS_Dds_-CONSTR_00732] | DDS serialization of UNION data type |
| [CP_SWS_Dds_-CONSTR_00733] | DDS serialization of POINTER data type |
| [CP_SWS_Dds_-CONSTR_00743] | CSM key configuration |
| [CP_SWS_Dds_-CONSTR_00754] | CSM job configuration |

Table B.1: Added Specification Items in R22-11

B.1.2 Changed Specification Items in R22-11

none

B.1.3 Deleted Specification Items in R22-11

none

B.2 Traceable item history of this document according to AUTOSAR Release R23-11

B.2.1 Added Specification Items in R23-11

| Number | Heading |
|---------------------|---|
| [CP_SWS_Dds_-00736] | DDS Data deserialization |
| [CP_SWS_Dds_-00764] | Delay of Information - receiving checks |
| [CP_SWS_Dds_-00834] | Rx queue processing rules |
| [CP_SWS_Dds_-00836] | Rx queue processing algorithm |
| [CP_SWS_Dds_-00837] | Tx queue processing algorithm |
| [CP_SWS_Dds_-00838] | Tx queue processing rules |





| Number | Heading |
|---------------------|----------------------|
| [CP_SWS_Dds_-00859] | RTPS Timestamp |
| [CP_SWS_Dds_-00873] | Processing timestamp |

Table B.2: Added Specification Items in R23-11

B.2.2 Changed Specification Items in R23-11

| Number | Heading |
|---------------------|--|
| [CP_SWS_Dds_-00726] | DDS-RTPS compliance |
| [CP_SWS_Dds_-00734] | DDS Data serialization |
| [CP_SWS_Dds_-00735] | Encoding Format and Endianness of Strings in DDS |
| [CP_SWS_Dds_-00753] | CSM library usage |
| [CP_SWS_Dds_-00756] | MAC calculation failure |
| [CP_SWS_Dds_-00761] | Repetition or Insertion of Information |
| [CP_SWS_Dds_-00762] | Loss or Incorrect sequence of Information |
| [CP_SWS_Dds_-00763] | Delay of Information - sending checks |
| [CP_SWS_Dds_-00766] | Corruption of Information |
| [CP_SWS_Dds_-00772] | Definiton of development errors in module Dds |
| [CP_SWS_Dds_-00773] | Definiton of runtime errors in module Dds |
| [CP_SWS_Dds_-00801] | Definition of imported datatypes of module Dds |
| [CP_SWS_Dds_-00802] | Definition of datatype Dds_ConfigType |
| [CP_SWS_Dds_-00811] | Dds_Init behaviour |
| [CP_SWS_Dds_-00813] | Dds_Init - Queue state |
| [CP_SWS_Dds_-00823] | Definition of scheduled function Dds_MainFunction_Rx |



△

| Number | Heading |
|---------------------|--|
| [CP_SWS_Dds_-00824] | Definition of scheduled function Dds_MainFunction_Tx |
| [CP_SWS_Dds_-00825] | Rx queues set processing order |
| [CP_SWS_Dds_-00826] | Dds_MainFunction_Rx - Error conditions |
| [CP_SWS_Dds_-00827] | Dds_MainFunction_Rx - OK conditions |
| [CP_SWS_Dds_-00828] | Tx queues set processing order |
| [CP_SWS_Dds_-00829] | Dds_MainFunction_Tx - Error conditions |
| [CP_SWS_Dds_-00830] | Dds_MainFunction_Tx - OK conditions |
| [CP_SWS_Dds_-00831] | Definition of API function Dds_Transmit |
| [CP_SWS_Dds_-00832] | Definition of mandatory interfaces in module Dds |
| [CP_SWS_Dds_-00833] | Definition of optional interfaces in module Dds |
| [CP_SWS_Dds_-00835] | Definition of callback function Dds_TriggerTransmit |
| [CP_SWS_Dds_-00841] | Definition of callback function Dds_RxIndication |
| [CP_SWS_Dds_-00843] | Definition of callback function Dds_TxConfirmation |
| [CP_SWS_Dds_-00851] | Internal transmission queues |
| [CP_SWS_Dds_-00852] | Dds_Transmit - Error conditions |
| [CP_SWS_Dds_-00854] | Dds_Transmit - DDS_E_U_PDUID_REJECTED |
| [CP_SWS_Dds_-00855] | Dds_Transmit - E_OK |
| [CP_SWS_Dds_-00862] | Dds_RxIndication - DDS_E_L_PDUID_IGNORED |
| [CP_SWS_Dds_-00863] | Dds_RxIndication - OK condition |
| [CP_SWS_Dds_-00864] | Internal reception queues |
| [CP_SWS_Dds_-00882] | Dds_TriggerTransmit behaviour |
| [CP_SWS_Dds_-01001] | DDS USER_DATA semantics |

Table B.3: Changed Specification Items in R23-11

B.2.3 Deleted Specification Items in R23-11

| Number | Heading |
|---------------------|--|
| [CP_SWS_Dds_-00727] | DDS standard serialization/deserialization rules |
| [CP_SWS_Dds_-00884] | Dds_TriggerTransmit limitation |

Table B.4: Deleted Specification Items in R23-11

B.2.4 Added Constraints in R23-11

| Number | Heading |
|------------------------------|--------------------------------|
| [CP_SWS_-Dds_-CONSTR_-00865] | Unicast transmission |
| [CP_SWS_-Dds_-CONSTR_-00866] | Multicast transmission |
| [CP_SWS_-Dds_-CONSTR_-00867] | Unicast reception |
| [CP_SWS_-Dds_-CONSTR_-00868] | Multicast reception |
| [CP_SWS_-Dds_-CONSTR_-00884] | Dds_TriggerTransmit limitation |

Table B.5: Added Constraints in R23-11

B.2.5 Changed Constraints in R23-11

| Number | Heading |
|------------------------------|-----------------------|
| [CP_SWS_-Dds_-CONSTR_-00712] | Topic name uniqueness |





| Number | Heading |
|--|--------------------------------------|
| [CP_SWS_- Dds_- CONSTR_- 00725] | No data serialization |
| [CP_SWS_- Dds_- CONSTR_- 00732] | DDS serialization of UNION data type |
| [CP_SWS_- Dds_- CONSTR_- 00743] | CSM key configuration |
| [CP_SWS_- Dds_- CONSTR_- 00754] | CSM job configuration |

Table B.6: Changed Constraints in R23-11

B.2.6 Deleted Constraints in R23-11

none