

<b>Document Title</b>	Integration of DDS Security
<b>Document Owner</b>	AUTOSAR
<b>Document Responsibility</b>	AUTOSAR
<b>Document Identification No</b>	1027

<b>Document Status</b>	published
<b>Part of AUTOSAR Standard</b>	Adaptive Platform
<b>Part of Standard Release</b>	R23-11

<b>Document Change History</b>			
<b>Date</b>	<b>Release</b>	<b>Changed by</b>	<b>Description</b>
2023-11-23	R23-11	AUTOSAR Release Management	<ul style="list-style-type: none"> <li>ID format updated, model references fixed ([<a href="#">TR_DDSS_00204</a>], [<a href="#">TR_DDSS_00005</a>], [<a href="#">TR_DDSS_00104</a>], [<a href="#">TR_DDSS_00202</a>], [<a href="#">TR_DDSS_00205</a>])</li> </ul>
2022-11-24	R22-11	AUTOSAR Release Management	<ul style="list-style-type: none"> <li>No content changes</li> </ul>
2021-11-25	R21-11	AUTOSAR Release Management	<ul style="list-style-type: none"> <li>Initial release</li> </ul>

## **Disclaimer**

This work (specification and/or software implementation) and the material contained in it, as released by AUTOSAR, is for the purpose of information only. AUTOSAR and the companies that have contributed to it shall not be liable for any use of the work.

The material contained in this work is protected by copyright and other types of intellectual property rights. The commercial exploitation of the material contained in this work requires a license to such intellectual property rights.

This work may be utilized or reproduced without any modification, in any form or by any means, for informational purposes only. For any other purpose, no part of the work may be utilized or reproduced, in any form or by any means, without permission in writing from the publisher.

The work has been developed for automotive applications only. It has neither been developed, nor tested for non-automotive applications.

The word AUTOSAR and the AUTOSAR logo are registered trademarks.

## Contents

1	Introduction	4
1.1	Objectives	4
1.2	Scope	4
2	Definition of terms and acronyms	5
2.1	Acronyms and abbreviations	5
2.2	Definition of terms	5
3	Related Documentation	6
3.1	Input documents & related standards and norms	6
4	AUTOSAR Metamodel to DDS Security mappings	7
4.1	Configuration workflow	7
4.2	Provisioning of DDS Security artifacts	8
4.3	Provisioning of the DDS Security Governance Document	9
4.4	Provisioning of the DDS Security Permissions Document	11
A	Mentioned Class Tables	17

# 1 Introduction

This Technical Report provides additional information to the DDS Network Binding of the Communications Management functional cluster of the AUTOSAR Adaptive Platform, as defined by [1].

DDS Security, as defined in [2], is a complementary standard to DDS, providing transport-independent security measures (authentication, secrecy, non-repudiation, integrity, access control and logging) without requiring changes to application logic.

## 1.1 Objectives

This document aims at mapping DDS Service Interface and Instance Deployment models, as well as IAM Communications Grant models, to DDS QoS policies, and DDS Security certificate, governance and permission documents as defined by [2].

## 1.2 Scope

This document builds on the DDS Network Binding as specified by [1] and supports, in summary, the following security mechanisms:

- Per-instance, per-event access control, along with secrecy and authentication configuration for in-band and out-of-band traffic
- Per-instance, per-field notifier access control, along with secrecy and authentication configuration for in-band and out-of-band traffic
- Per instance methods access control along with secrecy and authentication configuration for in-band and out-of-band traffic
- Per instance field methods (*Get/Set*) access control along with secrecy and authentication configuration for in-band and out-of-band traffic

As noted above, fine-grained security controls for independent methods and field methods (*Get/Set*) are not supported by DDS Security at the moment, due to the specific design of the DDS Network Binding, where all methods belonging to a single Service Interface Instance are multiplexed over a limited set of DDS Topics.

## 2 Definition of terms and acronyms

### 2.1 Acronyms and abbreviations

Abbreviation / Acronym:	Description:
ACL	Access Control List
CA	Certificate Authority
DDS	Data Distribution Service
IAM	Identity and Access Management
QoS	Quality of Service
URI	Uniform Resource Identifier

### 2.2 Definition of terms

Not applicable.

## 3 Related Documentation

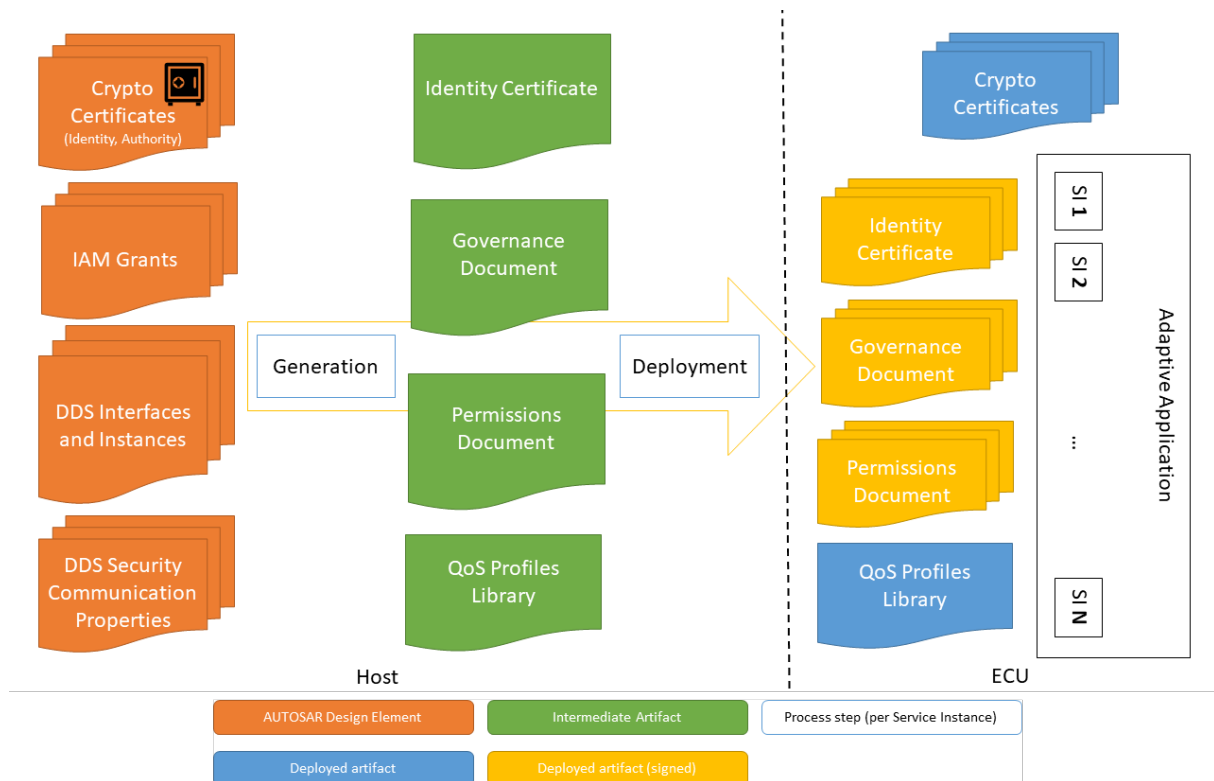
### 3.1 Input documents & related standards and norms

- [1] Specification of Communication Management  
AUTOSAR\_AP\_SWS\_CommunicationManagement
- [2] DDS Security, Version 1.1  
<https://www.omg.org/spec/DDS-SECURITY/1.1>
- [3] Specification of Manifest  
AUTOSAR\_AP\_TPS\_ManifestSpecification

## 4 AUTOSAR Metamodel to DDS Security mappings

### 4.1 Configuration workflow

Integrators should not manually manipulate DDS Security artifacts, but rather update related the AUTOSAR design elements, then re-generate and re-deploy the DDS Security artifacts:



**Figure 4.1: Workflow for DDS Security artifact generation and deployment**

Although the following sections describe this process in detail, a brief summary is presented here for clarity and ease of understanding:

1. DDS-specific deployment for Service Interfaces and Service Instances is modelled as prescribed in [3], including DDS Security Communication Properties ([DdsSecureComProps](#)) and the cryptographic resources associated to them ([CryptoCertificate](#))
2. Following the detailed procedures shown in the next sections, a set of intermediate DDS Security-specific artifacts are produced for each Provided or Required DDS Service Instance, portraying modelled instance identity, domain governance policies, participant policies and QoS policies
3. During deployment, for each service instance, identity certificates, governance and permission documents are signed using secret key material by the host, and deployed alongside relevant crypto certificates (without the private key part) and the QoS profiles library

4. In run-time, Adaptive Applications load the instance certificates, governance and permission documents referenced by the QoS profile assigned to each service instance in the QoS Profiles Library. Deployed crypto certificates (holding no secret key material at all, only public keys) are used to verify signatures for both own and foreign identity, governance and permission documents

## 4.2 Provisioning of DDS Security artifacts

**[TR\_DDSS\_00001]{DRAFT} Artifacts required by Provided or Required Service Instances** [For each `DdsServiceInstanceToMachineMapping` referencing a `DdsSecureComProps` object, the following artifacts shall be uniquely generated and deployed for access by the host `Process` during runtime along with the processed manifest:

- A unique, CA-signed DDS Security Governance Document, with contents according to [TR\_DDSS\_00101]
- A unique, CA-signed DDS Security Permissions Document, with contents according to [TR\_DDSS\_00201]
- A QoS profile to be referenced from `DdsProvidedServiceInstance` or `DdsRequiredServiceInstance` via `qosProfile`, with Domain Participant QoS properties set according to [TR\_DDSS\_00002], [TR\_DDSS\_00003], [TR\_DDSS\_00004], [TR\_DDSS\_00005], [TR\_DDSS\_00006] and [TR\_DDSS\_00007]

]()

**[TR\_DDSS\_00002]{DRAFT} Identity Certificate Authority** [The `dds.sec.auth.identity_ca` property shall be set to the short name path of the `CryptoCertificate` referenced by the `identityCertificateAuthority` attribute via `governance`, or an URI referencing a `CryptoCertificate` rendition that's supported by the DDS Security implementation (e.g. `file://...`).]()

**[TR\_DDSS\_00003]{DRAFT} Identity Certificate** [The `dds.sec.auth.identity_certificate` property shall be set to the short name path of the `CryptoCertificate` referenced by `identity`, or an URI referencing a `CryptoCertificate` rendition that's supported by the DDS Security implementation (e.g. `file://...`).]()

**[TR\_DDSS\_00004]{DRAFT} Private Key** [The `dds.sec.auth.private_key` property shall be set to the short name path of the `CryptoKeySlot` referenced, via `CryptoCertificateToCryptoKeySlotMapping`, by the `CryptoCertificate` defined in the `dds.sec.auth.identity_certificate` property, or an URI referencing a `CryptoKeySlot` rendition that's supported by the DDS Security implementation (e.g. `file://...`).]()

**[TR\_DDSS\_00005]{DRAFT} Permissions Certificate Authority** [The `dds.sec.auth.permissions_ca` property shall be set to the short name path of the `Cryp-`



`toCertificate` referenced by the `permissionCertificateAuthority` attribute via `governance`, or an URI referencing a `CryptoCertificate` rendition that's supported by the DDS Security implementation (e.g. `file://...`.)()

**[TR\_DDSS\_00006]{DRAFT} Governance Document** [The `dds.sec.access.governance` property shall be set to the short name path or URI of the CA-signed DDS Security Governance Document created in the context of [\[TR\\_DDSS\\_00001\]](#).]()

**[TR\_DDSS\_00007]{DRAFT} Permissions Document** [The `dds.sec.access.permissions` property shall be set to the short name path or URI of the CA-signed DDS Security Permissions Document created in the context of [\[TR\\_DDSS\\_00001\]](#).]()

The dual nature (short name paths or URIs) of these properties allows sensitive crypto resources and related documents to be addressed from sources of various kinds, such as filesystems (e.g. `file://...`) or AUTOSAR CryptoAPI key slot specifiers (e.g. `/CryptoCertificates/Identity`).

### 4.3 Provisioning of the DDS Security Governance Document

In DDS Security, all Domain Participants communicating in the same secure domain operate under an authentic set of governance rules described in governance documents modelled via `DdsSecureGovernance`.

**[TR\_DDSS\_00101]{DRAFT} Governance Document** [In the DDS Security Governance Document associated to each Service Instance through `governance` via `secureComPropsForDds` in the context of [\[TR\\_DDSS\\_00001\]](#), a `domain_rule` element shall be incorporated under the `domain_access_rules` element as follows:

- The `allow_unauthenticated_participants` element is set to the value of `allowUnauthenticatedParticipants` (via `governance`)
- The `enable_join_access_control` element is set to the value of `enableJoinAccessControl` (via `governance`)
- The `discovery_protection_kind` element is set to the value of `discoveryProtectionKind` (via `governance`)
- The `liveliness_protection_kind` element is set to the value of `livelinessProtectionKind` (via `governance`)
- The `rtps_protection_kind` element is set to the value of `rtpsProtectionKind` (via `governance`)
- One `topic_access_rules` element as described by [\[TR\\_DDSS\\_00102\]](#), [\[TR\\_DDSS\\_00103\]](#) and [\[TR\\_DDSS\\_00104\]](#)

]()

[TR\_DDSS\_00102]{DRAFT} **Generic topic access rules** [At least one single "catch-all" topic access rule with topic expression `ara.com://services/*` shall be added under the `topic_access_rules` element of the `domain_rule` element defined by [TR\_DDSS\_00101]. Finer-grained sets of topic access rules (e.g., per Service Interface or Service Interface element) are acceptable as long as they follow rules expressed by [TR\_DDSS\_00103] and [TR\_DDSS\_00104].]()

[TR\_DDSS\_00103]{DRAFT} **Detailed topic access rules Service Discovery** [One single topic access rule with topic expression `ara.com://services/discovery` shall be added under the `topic_access_rules` element of the `domain_rule` element defined by [TR\_DDSS\_00101]. Specific access parameters for this topic are implementation dependent.]()

[TR\_DDSS\_00104]{DRAFT} **Detailed topic access rules for Service Interfaces** [For each `DdsServiceInstanceToMachineMapping` referencing a `DdsSecureComProps` object, each associated `DdsServiceInterfaceDeployment` may extend the associated (in the context of [TR\_DDSS\_00101]) Governance Document `topic_access_rules` element with `topic_rule` elements as follows:

- Add one `topic_rule` element for each `DdsEventDeployment` associated to the `DdsServiceInterfaceDeployment`, with a set of sub-elements mirroring the `TopicAccessRule` values referenced by `eventTopicAccessRule`, and a `topic_expression` sub-element set to `ara.com://services/<ServiceInterface>*/<EventTopicName>`, where:
  - `<ServiceInterface>` takes the value of `serviceInterfaceId`
  - `<EventTopicName>` takes the value of `topicName`
- Add one `topic_rule` element, similar to the aforementioned `DdsEventDeployment` element, for each `DdsFieldDeployment` referencing a field with `hasNotifier` set to `True` via `field`
- Add two `topic_rule` elements, each with a set of sub-elements mirroring the `TopicAccessRule` referenced by `methodTopicsAccessRule`, and `topic_expression` sub-elements respectively set to `ara.com://services/<ServiceInterface>*/<MethodRequestTopicName>` and `ara.com://services/<ServiceInterface>*/<MethodReplyTopicName>`, where:
  - `<ServiceInterface>` takes the value of `serviceInterfaceId`
  - `<MethodRequestTopicName>` takes the value of `methodRequestTopicName`
  - `<MethodReplyTopicName>` takes the value of `methodReplyTopicName`
- Add two `topic_rule` elements, each with a set of sub-elements mirroring the `TopicAccessRule` referenced by `fieldTopicsAccessRule`, and `topic_expression` sub-elements respectively set to `ara.com://services/<ServiceInterface>*/<FieldRequestTopicName>` and

ara.com://services/<ServiceInterface>\*/<FieldReplyTopicName>, where:

- <ServiceInterface> takes the value of `serviceInterfaceId`
- <FieldRequestTopicName> takes the value of `fieldRequestTopicName`
- <FieldReplyTopicName> takes the value of `fieldReplyTopicName`

]()

## 4.4 Provisioning of the DDS Security Permissions Document

In DDS Security, all Domain Participants communicating in the same secure domain operate under an authentic set of ACL-like policies applicable to domains, partitions, topics and topic instances, described in permissions documents modelled via `ComGrants`.

**[TR\_DDSS\_00201]{DRAFT} Permissions file contents for DDS IAM Remote Subjects** [In the DDS Security Permissions Document associated to each Service Instance via `secureComPropsForDds` in the context of [TR\_DDSS\_00001], a `grant` element shall added under the `permissions` element, including:

- A `subject_name` element set to the subject name field of the certificate referenced by `identity`.
- An `allow_rule` element, including:
  - A `domains` element mirroring `domainId` through `governance`
  - A `publish` element with contents for provided and required service instances according to [TR\_DDSS\_00202] and [TR\_DDSS\_00204], respectively
  - A `subscribe` element with contents for provided and required service instances according to [TR\_DDSS\_00203] and [TR\_DDSS\_00205], respectively
- A `default` element set to DENY

]()

**[TR\_DDSS\_00202]{DRAFT} Allow/publish rules for Provided Service Instances** [For each `DdsServiceInstanceToMachineMapping` referencing a `DdsSecureComProps` object, each associated `DdsProvidedServiceInstance` shall extend the associated (in the context of [TR\_DDSS\_00201]) Permissions Document `publish` element as follows:

- Under the `partitions` element:

- Add, if it doesn't exist yet, an empty `partition` element (for updating the discovery topic)
- Add an additional `partition` element with value `ara.com://-services/<ServiceInterface>/<ServiceInstance>`, where:
  - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
  - \* `ServiceInstance` takes the value of `serviceInstanceId`
- Under the `topics` element:
  - Add, if it doesn't exist yet, a `topic` element with value `ara.com://-services/discovery` (for updating the discovery topic)
  - Add two `topic` elements for each `ComEventGrant` referencing the current `DdsProvidedServiceInstance` via `serviceInstance` with values `ara.com://services/<ServiceInterface>/<ServiceInstance>/<EventTopicName>` and `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<EventTopicName>` where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `serviceInstanceId`
    - \* `Major` and `Minor` takes the value of `majorVersion` and `minorVersion` (via `serviceInterfaceDeployment`)
    - \* `EventTopicName` takes the value of `topicName` (through `serviceDeployment`)
  - Add two `topic` elements, similar to the aforementioned `ComEventGrant` elements, for each `ComFieldGrant` referencing a field with `hasNotifier` set to `True` via `serviceDeployment`
  - Add four `topic` elements with values `ara.com://services/<ServiceInterface>/<ServiceInstance>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<ServiceInstance>/<FieldsTopicName>`, `ara.com://-services/<ServiceInterface>/<Major>.<Minor>/<FieldsTopicName>` where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `serviceInstanceId`
    - \* `Major` and `Minor` takes the value of `majorVersion` and `minorVersion` (via `serviceInterfaceDeployment`)

- \* `MethodsTopicName` takes the value of `methodReplyTopicName` (through `serviceInterfaceDeployment`)
- \* `FieldsTopicName` takes the value of `fieldReplyTopicName` (through `serviceInterfaceDeployment`)

]()

### [TR\_DDSS\_00203]{DRAFT} Allow/subscribe rules for Provided Service Instances

[For each `DdsServiceInstanceToMachineMapping` referencing a `DdsSecureComProps` object, each associated `DdsProvidedServiceInstance` shall extend the associated (in the context of [TR\_DDSS\_00201]) Permissions Document `subscribe` element as follows:

- Under the `partitions` element:
  - Add a `partition` element with value `ara.com://services/<ServiceInterface>/<ServiceInstance>`, where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `serviceInstanceId`
- Under the `topics` element:
  - Add four `topic` elements with values `ara.com://services/<ServiceInterface>/<ServiceInstance>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<ServiceInstance>/<FieldsTopicName>`, `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<FieldsTopicName>` where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `serviceInstanceId`
    - \* `Major` and `Minor` takes the value of `majorVersion` and `minorVersion` (via `serviceInterfaceDeployment`)
    - \* `MethodsTopicName` takes the value of `methodRequestTopicName` (through `serviceInterfaceDeployment`)
    - \* `FieldsTopicName` takes the value of `fieldRequestTopicName` (through `serviceInterfaceDeployment`)

]()

### [TR\_DDSS\_00204]{DRAFT} Allow/publish rules for Required Service Instances

[For each `DdsServiceInstanceToMachineMapping` referencing a `DdsSecureComProps` object, each associated `DdsRequiredServiceInstance` shall extend

the associated (in the context of [TR\_DDSS\_00201]) Permissions Document `publish` element as follows:

- Under the `partitions` element:
  - Add an additional `partition` element with value `ara.com://-services/<ServiceInterface>/<ServiceInstance>`, where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `requiredServiceInstanceId`
- Under the `topics` element:
  - Add four `topic` elements with values `ara.com://services/<ServiceInterface>/<ServiceInstance>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<ServiceInstance>/<FieldsTopicName>`, `ara.com://-services/<ServiceInterface>/<Major>.<Minor>/<FieldsTopicName>` where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `requiredServiceInstanceId`
    - \* `Major` and `Minor` takes the value of `majorVersion` and `minorVersion` (via `serviceInterfaceDeployment`)
    - \* `MethodsTopicName` takes the value of `methodRequestTopicName` (through `serviceInterfaceDeployment`)
    - \* `FieldsTopicName` takes the value of `fieldRequestTopicName` (through `serviceInterfaceDeployment`)

]()

### [TR\_DDSS\_00205]{DRAFT} Allow/subscribe rules for Required Service Instances

[For each `DdsServiceInstanceToMachineMapping` referencing a `DdsSecureComProps` object, each associated `DdsRequiredServiceInstance` shall extend the associated (in the context of [TR\_DDSS\_00201]) Permissions Document `subscribe` element as follows:

- Under the `partitions` element:
  - Add, if it doesn't exist yet, an empty `partition` element (for monitoring the discovery topic)

- Add an additional partition element with value `ara.com://-services/<ServiceInterface>/<ServiceInstance>`, where:
  - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
  - \* `ServiceInstance` takes the value of `requiredServiceInstanceId`
- Under the `topics` element:
  - Add, if it doesn't exist yet, a topic element with value `ara.com://-services/discovery` (for monitoring the discovery topic)
  - Add two topic elements for each `ComEventGrant` referencing the current `DdsRequiredServiceInstance` via `serviceInstance` with values `ara.com://services/<ServiceInterface>/<ServiceInstance>/<EventTopicName>` and `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<EventTopicName>` where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `requiredServiceInstanceId`
    - \* `Major` and `Minor` takes the value of `majorVersion` and `minorVersion` (via `serviceInterfaceDeployment`)
    - \* `EventTopicName` takes the value of `topicName` (through `serviceDeployment`)
  - Add two topic elements, similar to the aforementioned `ComEventGrant` elements, for each `ComFieldGrant` referencing a field with `hasNotifier` set to `True` via `serviceDeployment`
  - Add four topic elements with values `ara.com://services/<ServiceInterface>/<ServiceInstance>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<Major>.<Minor>/<MethodsTopicName>`, `ara.com://services/<ServiceInterface>/<ServiceInstance>/<FieldsTopicName>`, `ara.com://-services/<ServiceInterface>/<Major>.<Minor>/<FieldsTopicName>` where:
    - \* `ServiceInterface` takes the value of `serviceInterfaceId` (through `serviceInterfaceDeployment`)
    - \* `ServiceInstance` takes the value of `requiredServiceInstanceId`
    - \* `Major` and `Minor` takes the value of `majorVersion` and `minorVersion` (via `serviceInterfaceDeployment`)

- \* `MethodsTopicName` takes the value of `methodReplyTopicName` (through `serviceInterfaceDeployment`)
- \* `FieldsTopicName` takes the value of `fieldReplyTopicName` (through `serviceInterfaceDeployment`)

]0



## A Mentioned Class Tables

For the sake of completeness, this chapter contains a set of class tables representing meta-classes mentioned in the context of this document.

<b>Class</b>	<b>AdaptivePlatformServiceInstance</b> (abstract)			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInstanceDeployment			
<b>Note</b>	This meta-class represents the ability to describe the existence and configuration of a service instance in an abstract way.			
<b>Base</b>	<i>ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement</i>			
<b>Subclasses</b>	<i>ProvidedApServiceInstance, RequiredApServiceInstance</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
e2eEventProtectionProps	End2EndEventProtectionProps	*	aggr	This aggregation allows to protect an event or a field notifier that is defined inside of the ServiceInterface that is referenced by the ServiceInstance in the role serviceInterface.
e2eMethodProtectionProps	End2EndMethodProtectionProps	*	aggr	This aggregation allows to protect a method or a field getter or a field setter that is defined inside of the ServiceInterface that is referenced by the ServiceInstance in the role serviceInterface
secureComConfig	ServiceInterfaceElementSecureComConfig	*	aggr	Configuration settings to secure the communication of ServiceInterface elements.
serviceInterfaceDeployment	ServiceInterfaceDeployment	0..1	ref	Reference to a ServiceInterfaceDeployment that identifies the ServiceInterface that is represented by the ServiceInstance.

**Table A.1: AdaptivePlatformServiceInstance**

<b>Class</b>	<b>ComEventGrant</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::PlatformModuleDeployment::IdentityAccessManagement			
<b>Note</b>	This meta-class represents the ability to grant access to a ServiceInterface.event. <b>Tags:</b> atp.Status=candidate atp.recommendedPackage=Grants			
<b>Base</b>	<i>ARElement, ARObject, CollectableElement, ComGrant, Grant, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDeploymentElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
design	ComEventGrantDesign	0..1	ref	This reference identifies the ComEventGrantDesign that the enclosing ComEventGrant was created from. <b>Stereotypes:</b> atpUriDef <b>Tags:</b> atp.Status=candidate
serviceDeployment	ServiceEventDeployment	0..1	ref	This reference identifies the applicable deployment within the context of an AdaptivePlatformServiceInstance for which the grant applies. <b>Tags:</b> atp.Status=candidate

**Table A.2: ComEventGrant**

<b>Class</b>	<b>ComFieldGrant</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::PlatformModuleDeployment::IdentityAccessManagement			
<b>Note</b>	This meta-class represents the ability to grant access to a ServiceInterface.field. <b>Tags:</b> atp.Status=candidate atp.recommendedPackage=Grants			
<b>Base</b>	ARElement, ARObject, CollectableElement, <a href="#">ComGrant</a> , Grant, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDeploymentElement, UploadablePackageElement			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
design	ComFieldGrantDesign	0..1	ref	This reference identifies the ComFieldGrantDesign that the enclosing ComFieldGrant was created from. <b>Stereotypes:</b> atpUriDef <b>Tags:</b> atp.Status=candidate
role	FieldAccessEnum	0..1	attr	This attribute provides the ability to further specify the access to the ServiceInterface.field. <b>Tags:</b> atp.Status=candidate
service Deployment	<a href="#">ServiceField Deployment</a>	0..1	ref	This reference identifies the applicable deployment within the context of an AdaptivePlatformServiceInstance for which the grant applies. <b>Tags:</b> atp.Status=candidate

**Table A.3: ComFieldGrant**

<b>Class</b>	<b>ComGrant</b> (abstract)			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::PlatformModuleDeployment::IdentityAccessManagement			
<b>Note</b>	This meta-class serves as the abstract base class for defining specific ComGrants <b>Tags:</b> atp.Status=candidate			
<b>Base</b>	ARElement, ARObject, CollectableElement, Grant, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDeploymentElement, UploadablePackageElement			
<b>Subclasses</b>	<a href="#">ComEventGrant</a> , <a href="#">ComFieldGrant</a> , ComMethodGrant, ComTriggerGrant			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
remoteSubject	AbstractIamRemote Subject	*	ref	This optional reference defines the remoteSubject that is allowed to access the defined Object via the Grant. <b>Tags:</b> atp.Status=candidate
serviceInstance	<a href="#">AdaptivePlatform ServiceInstance</a>	0..1	ref	This reference identifies the applicable AdaptivePlatform ServiceInstance for which the grant applies. <b>Tags:</b> atp.Status=candidate

**Table A.4: ComGrant**

<b>Class</b>	<b>CryptoCertificate</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::PlatformModuleDeployment::CryptoDeployment			
<b>Note</b>	This meta-class represents the ability to model a cryptographic certificate.			
<b>Base</b>	ARObject, Identifiable, MultilanguageReferrable, Referrable			
<b>Aggregated by</b>	CryptoModuleInstantiation.cryptoCertificate			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>





Class		CryptoCertificate		
isPrivate	Boolean	0..1	attr	This attribute controls the possibility to access the content of the CryptoCertificateSlot by Find() interfaces of the X509 Provider.

**Table A.5: CryptoCertificate**

Class		CryptoCertificateToCryptoKeySlotMapping		
Package	M2::AUTOSARTemplates::AdaptivePlatform::PlatformModuleDeployment::CryptoDeployment			
Note	This meta-class represents the ability to define a mapping between a CryptoKeySlot and a Crypto Certificate.			
Base	ARObject			
Aggregated by	CryptoModuleInstantiation.certificateToKeySlotMapping			
Attribute	Type	Mult.	Kind	Note
crypto Certificate	CryptoCertificate	0..1	ref	This reference represents the mapped cryptoCertificate.
cryptoKeySlot	CryptoKeySlot	0..2	ref	This reference represents the mapped cryptoKeySlot.

**Table A.6: CryptoCertificateToCryptoKeySlotMapping**

Class		CryptoKeySlot		
Package	M2::AUTOSARTemplates::AdaptivePlatform::PlatformModuleDeployment::CryptoDeployment			
Note	This meta-class represents the ability to define a concrete key to be used for a crypto operation. <b>Tags:</b> atp.ManifestKind=MachineManifest			
Base	ARObject, Identifiable, MultilanguageReferrable, Referrable			
Aggregated by	CryptoProvider.keySlot			
Attribute	Type	Mult.	Kind	Note
allocateShadow Copy	Boolean	0..1	attr	This attribute defines whether a shadow copy of this Key Slot shall be allocated to enable rollback of a failed Key Slot update campaign (see interface BeginTransaction).
cryptoAlgId	String	0..1	attr	This attribute defines a crypto algorithm restriction (kAlgId Any means without restriction). The algorithm can be specified partially: family & length, mode, padding.  Future Crypto Providers can support some crypto algorithms that are not well known/ standardized today, therefore AUTOSAR doesn't provide a concrete list of crypto algorithms' identifiers and doesn't suppose usage of numerical identifiers. Instead of this a provider supplier should provide string names of supported algorithms in accompanying documentation. The name of a crypto algorithm shall follow the rules defined in the specification of cryptography for Adaptive Platform.
cryptoObject Type	CryptoObjectTypeEnum	0..1	attr	Object type that can be stored in the slot. If this field contains "Undefined" then mSlotCapacity must be provided and larger then 0. <b>Tags:</b> atp.Status=candidate
keySlotAllowed Modification	CryptoKeySlotAllowed Modification	0..1	aggr	Restricts how this keySlot may be used <b>Tags:</b> atp.Status=candidate
keySlotContent AllowedUsage	CryptoKeySlotContent AllowedUsage	*	aggr	Restriction of allowed usage of a key stored to the slot. <b>Tags:</b> atp.Status=candidate





Class		CryptoKeySlot		
slotCapacity	PositiveInteger	0..1	attr	Capacity of the slot in bytes to be reserved by the stack vendor. One use case is to define this value in case that the cryptoObjectType is undefined and the slot size can not be deduced from cryptoObjectType and cryptoAlgId. "0" means slot size can be deduced from cryptoObjectType and cryptoAlgId.
slotType	CryptoKeySlotType Enum	0..1	attr	This attribute defines whether the keySlot is exclusively used by the Application; or whether it is used by Stack Services and managed by a Key Manager Application. <b>Tags:</b> atp.Status=candidate

**Table A.7: CryptoKeySlot**

Class		DdsEventDeployment		
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInterfaceDeployment			
<b>Note</b>	DDS configuration settings for an Event.			
<b>Base</b>	<i>ARObject, Identifiable, MultilanguageReferrable, Referrable, ServiceEventDeployment</i>			
<b>Aggregated by</b>	DdsFieldDeployment.notifier, ServiceInterfaceDeployment.eventDeployment			
Attribute	Type	Mult.	Kind	Note
eventTopic AccessRule	DdsTopicAccessRule	0..1	ref	DDS Security access rule applicable to the DDS Topics used for the service interface event.
topicName	String	0..1	attr	Name of the DDS Topic associated with the Event.
transport Protocol	String	*	attr	This attribute defines over which Transport Layer Protocol(s) this event is intended to be sent.

**Table A.8: DdsEventDeployment**

Class		DdsProvidedServiceInstance		
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInstanceDeployment			
<b>Note</b>	This meta-class represents the ability to describe the existence and configuration of a provided service instance in a concrete implementation on top of DDS. <b>Tags:</b> atp.recommendedPackage=ServiceInstances			
<b>Base</b>	<i>ARElement, ARObject, AdaptivePlatformServiceInstance, CollectableElement, DdsQosProps, DdsServiceInstanceProps, Identifiable, MultilanguageReferrable, PackageableElement, ProvidedApServiceInstance, Referrable, UploadableDesignElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
Attribute	Type	Mult.	Kind	Note
discoveryType	DdsServiceInstance DiscoveryTypeEnum	0..1	attr	Discovery protocol.
eventQosProps	DdsEventQosProps	*	aggr	List of configuration properties for the Events that are provided by the Service Instance.
fieldNotifierQos Props	DdsFieldQosProps	*	aggr	List of configuration properties for Field notifiers that are provided by the Service Instance.
resource IdentifierType	DdsServiceInstance ResourceIdentifierType Enum	0..1	attr	Type of resource identification scheme.
serviceInstance Id	PositiveInteger	0..1	attr	Identification number that is used by DDS to identify DomainParticipants associated with an instance of the service.

**Table A.9: DdsProvidedServiceInstance**

<b>Class</b>	<b>DdsQosProps</b> (abstract)			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInstanceDeployment			
<b>Note</b>	QoS configuration properties for the DDS entities associated with an event, method, or field provided by or requested from a Service Instance using DDS as the underlying network binding.			
<b>Base</b>	<i>ARObject</i>			
<b>Subclasses</b>	DdsEventQosProps, DdsFieldQosProps, <i>DdsServiceInstanceProps</i>			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
qosProfile	String	0..1	attr	Identifies a group of QoS Policies that apply to the DDS entities associated with the event, method, field, or the service instance.

**Table A.10: DdsQosProps**

<b>Class</b>	<b>DdsRequiredServiceInstance</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInstanceDeployment			
<b>Note</b>	This meta-class represents the ability to describe the existence and configuration of a required service instance in a concrete implementation on top of DDS. <b>Tags:</b> atp.recommendedPackage=ServiceInstances			
<b>Base</b>	<i>ARElement, ARObject, AdaptivePlatformServiceInstance, CollectableElement, DdsQosProps, DdsServiceInstanceProps, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, RequiredApServiceInstance, UploadableDesignElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
blocklistedVersion	DdsServiceVersion	*	aggr	Collection of blocklisted versions.
discoveryType	DdsServiceInstanceDiscoveryTypeEnum	0..1	attr	Discovery protocol.
eventQosProps	DdsEventQosProps	*	aggr	List of configuration properties for the Events that are required by the Service Instance.
fieldNotifierQosProps	DdsFieldQosProps	*	aggr	List of configuration properties for Field notifiers that are required by the Service Instance.
requiredServiceInstanceid	AnyServiceInstanceid	0..1	attr	This attribute represents the ability to describe the required service instance ID.

**Table A.11: DdsRequiredServiceInstance**

<b>Class</b>	<b>DdsSecureComProps</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInstanceMapping			
<b>Note</b>	Identity and governance information of participants in case of DDS Security. <b>Tags:</b> atp.recommendedPackage=SecureComProps			
<b>Base</b>	<i>ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, SecureComProps, UploadableDesignElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
governance	<a href="#">DdsSecureGovernance</a>	0..1	ref	This attribute defines general DDS Security communication properties applicable to the DDS domain(s) in which the subject operates. <b>Tags:</b> atp.Status=candidate
identity	<a href="#">CryptoCertificate</a>	0..1	ref	This attribute defines the cryptographic identity of the subject.

**Table A.12: DdsSecureComProps**

<b>Class</b>	<b>DdsSecureGovernance</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::SecureCommunication			
<b>Note</b>	Configuration of DDS Security for all applications joining a specific set of DDS Domains. <b>Tags:</b> atp.Status=candidate atp.recommendedPackage=DdsSecureGovernances			
<b>Base</b>	<i>ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
allowUnauthenticatedParticipants	Boolean	0..1	attr	Defines whether unauthenticated participants can join this domain. <b>Tags:</b> atp.Status=candidate
discoveryProtectionKind	DdsProtectionKind Enum	0..1	attr	Defines the kind of cryptographic transformation to apply in DDS discovery communication. <b>Tags:</b> atp.Status=candidate
domainId	DdsDomainRange	*	aggr	Set of domains to be covered by this property set. <b>Tags:</b> atp.Status=candidate
enableJoinAccessControl	Boolean	0..1	attr	Defines whether access control is to be enforced upon joining this domain. <b>Tags:</b> atp.Status=candidate
identityCertificateAuthority	<a href="#">CryptoCertificate</a>	0..1	ref	Certificate representing the identity certificate authority applicable to the domain(s) specified by domainIds. <b>Tags:</b> atp.Status=candidate
livelinessProtectionKind	DdsProtectionKind Enum	0..1	attr	Defines the kind of cryptographic transformation to apply in DDS liveliness communication. <b>Tags:</b> atp.Status=candidate
permissionCertificateAuthority	<a href="#">CryptoCertificate</a>	0..1	ref	Certificate representing the permissions certificate authority applicable to the domain(s) specified by domainIds. <b>Tags:</b> atp.Status=candidate
rtpsProtectionKind	DdsProtectionKind Enum	0..1	attr	Defines the kind of cryptographic transformation to apply to whole DDS RTPS. <b>Tags:</b> atp.Status=candidate

**Table A.13: DdsSecureGovernance**

<b>Class</b>	<b>DdsServiceInstanceToMachineMapping</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInstanceMapping			
<b>Note</b>	This meta-class allows to map DdsServiceInstances to a CommunicationConnector of a Machine. <b>Tags:</b> atp.recommendedPackage=ServiceInstanceToMachineMappings			
<b>Base</b>	<i>ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, ServiceInstanceToMachineMapping, UploadableDesignElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
secureComPropsForDds	<a href="#">DdsSecureComProps</a>	0..1	ref	Reference to SecureComProps applicable to the service instance.

**Table A.14: DdsServiceInstanceToMachineMapping**

<b>Class</b>	<b>DdsServiceInterfaceDeployment</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInterfaceDeployment			
<b>Note</b>	DDS configuration settings for a ServiceInterface. <b>Tags:</b> atp.recommendedPackage=ServiceInterfaceDeployments			
<b>Base</b>	<i>ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, ServiceInterfaceDeployment, UploadableDesignElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
fieldReplyTopicName	String	0..1	attr	Name of the DDS Reply Topic associated with the Field.
fieldRequestTopicName	String	0..1	attr	Name of the DDS Request Topic associated with the Field.
fieldTopicsAccessRule	DdsTopicAccessRule	0..1	ref	DDS Security access rule applicable to the DDS Topics used for service interface field access methods (Get, Set).
methodReplyTopicName	String	0..1	attr	Name of the DDS Reply Topic associated with the Method.
methodRequestTopicName	String	0..1	attr	Name of the DDS Request Topic associated with the Method.
methodTopicsAccessRule	DdsTopicAccessRule	0..1	ref	DDS Security access rule applicable to the DDS Topics used for service interface methods.
serviceInterfaceId	String	0..1	attr	Unique Identifier that identifies the ServiceInterface in DDS. This Identifier is encoded in the USER_DATA QoS of the DomainParticipant associated with the Service Instance and its value is propagated by DDS Discovery messages.
transportProtocol	String	*	attr	This attribute defines over which Transport Layer Protocol(s) this Method is intended to be sent.

**Table A.15: DdsServiceInterfaceDeployment**

<b>Class</b>	<b>Field</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ApplicationDesign::PortInterface			
<b>Note</b>	This meta-class represents the ability to define a piece of data that can be accessed with read and/or write semantics. It is also possible to generate a notification if the value of the data changes.			
<b>Base</b>	<i>ARObject, AtpFeature, AtpPrototype, AutosarDataPrototype, DataPrototype, Identifiable, MultilanguageReferrable, Referrable</i>			
<b>Aggregated by</b>	ApplicationInterface.attribute, <i>AtpClassifier.atpFeature</i> , <a href="#">ServiceInterface.field</a>			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
hasGetter	Boolean	0..1	attr	This attribute controls whether read access is foreseen to this field.
hasNotifier	Boolean	0..1	attr	This attribute controls whether a notification semantics is foreseen to this field.
hasSetter	Boolean	0..1	attr	This attribute controls whether write access is foreseen to this field.

**Table A.16: Field**

<b>Class</b>	<b>Process</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ExecutionManifest			
<b>Note</b>	This meta-class provides information required to execute the referenced executable. <b>Tags:</b> atp.recommendedPackage=Processes			





Class	Process			
<b>Base</b>	<i>ARElement, ARObject, AbstractExecutionContext, AtpClassifier, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDeploymentElement, UploadablePackageElement</i>			
<b>Aggregated by</b>	ARPackage.element			
Attribute	Type	Mult.	Kind	Note
design	ProcessDesign	0..1	ref	This reference represents the identification of the design-time representation for the Process that owns the reference.
executable	Executable	*	ref	Reference to executable that is executed in the process. <b>Stereotypes:</b> atpUriDef
functionCluster Affiliation	String	0..1	attr	This attribute specifies which functional cluster the process is affiliated with.
numberOf RestartAttempts	PositiveInteger	0..1	attr	This attribute defines how often a process shall be restarted if the start fails. numberOfRestartAttempts = "0" OR Attribute not existing, start once numberOfRestartAttempts = "1", start a second time
preMapping	Boolean	0..1	attr	This attribute describes whether the executable is preloaded into the memory.
processState Machine	ModeDeclarationGroup Prototype	0..1	aggr	Set of Process States that are defined for the process.
securityEvent	SecurityEventDefinition	*	ref	The reference identifies the collection of SecurityEvents that can be reported by the Process. <b>Stereotypes:</b> atpSplitable; atpUriDef <b>Tags:</b> atp.Splitkey=securityEvent atp.Status=candidate
stateDependent StartupConfig	StateDependentStartup Config	*	aggr	Applicable startup configurations.

**Table A.17: Process**

<b>Class</b>	<b>ServiceFieldDeployment</b> (abstract)			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ServiceInstanceManifest::ServiceInterfaceDeployment			
<b>Note</b>	This abstract meta-class represents the ability to specify a deployment of a Field to a middleware transport layer.			
<b>Base</b>	<i>ARObject, Identifiable, MultilanguageReferrable, Referrable</i>			
<b>Subclasses</b>	DdsFieldDeployment, SomeipFieldDeployment, UserDefinedFieldDeployment			
<b>Aggregated by</b>	<i>ServiceInterfaceDeployment.fieldDeployment</i>			
Attribute	Type	Mult.	Kind	Note
field	Field	0..1	ref	Reference to a Field that is deployed to a middleware transport layer. <b>Stereotypes:</b> atpUriDef

**Table A.18: ServiceFieldDeployment**



<b>Class</b>	<b>ServiceInterface</b>			
<b>Package</b>	M2::AUTOSARTemplates::AdaptivePlatform::ApplicationDesign::PortInterface			
<b>Note</b>	This represents the ability to define a PortInterface that consists of a heterogeneous collection of methods, events and fields. <b>Tags:</b> atp.recommendedPackage=ServiceInterfaces			
<b>Base</b>	ARElement, ARObjct, AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, PortInterface, Referrable			
<b>Aggregated by</b>	ARPackage.element			
<b>Attribute</b>	<b>Type</b>	<b>Mult.</b>	<b>Kind</b>	<b>Note</b>
event	VariableDataPrototype	*	aggr	This represents the collection of events defined in the context of a ServiceInterface. <b>Stereotypes:</b> atpSplitable; atpVariation <b>Tags:</b> atp.Splitkey=event.shortName, event.variationPoint.shortLabel vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=30
field	Field	*	aggr	This represents the collection of fields defined in the context of a ServiceInterface. <b>Stereotypes:</b> atpSplitable; atpVariation <b>Tags:</b> atp.Splitkey=field.shortName, field.variationPoint.shortLabel vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=40
majorVersion	PositiveInteger	0..1	attr	Major version of the service contract. <b>Tags:</b> xml.sequenceOffset=10
method	ClientServerOperation	*	aggr	This represents the collection of methods defined in the context of a ServiceInterface. <b>Stereotypes:</b> atpSplitable; atpVariation <b>Tags:</b> atp.Splitkey=method.shortName, method.variationPoint.shortLabel vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=50
minorVersion	PositiveInteger	0..1	attr	Minor version of the service contract. <b>Tags:</b> xml.sequenceOffset=20
trigger	Trigger	*	aggr	This represents the collection of triggers defined in the context of a ServiceInterface. <b>Stereotypes:</b> atpSplitable; atpVariation <b>Tags:</b> atp.Splitkey=trigger.shortName, trigger.variationPoint.shortLabel vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=60

**Table A.19: ServiceInterface**