

# Topic and Partition Read/Write access QoS policy

In order to allow a configuration of OpenSplice DDS where on a specific node only applications can read items for specific topics PrismTech have implemented the Topic and Partition Read/Write access QoS policy. Below are the documentation changes related to this functionality. These will be added to the OpenSplice DDS Documentation set in a future release.

## 1. Deployment manual changes

The configuration tool needs to allow for the static configuration of partition and topic access control. To accommodate this the domain attribute will have two new child elements introduced.

### 1.1 PartitionAccess element

This element is used to configure the access rights for a specific partition on a node. By default all partitions have read and write access, which means subscribers and publishers may be created for all partitions. However by changing the access level of specific partitions it is possible to prevent publishers and/or subscribers to attach to these partitions.

The PartitionAccess element facilitates the configuration of such behavior. This is done by allowing the definition of a partition expression along with a specific access mode for that partition. The PartitionAccess element resides as a child element within the Domain element. The exact definition of the PartitionAccess element is as follows:

Full path	OpenSplice/Domain/PartitionAccess
Occurrences (min-max)	*
Child-elements	<none>
Required attributes	Attribute partition_expression Attribute access_mode
Optional attributes	<none>

An example demonstrates the usage of this element:

```
<OpenSplice>
  <Domain>
    <PartitionAccess partition_expression="/remote/*" access_mode="readwrite"/>
  </Domain>
</OpenSplice>
```

#### 1.1.1 Attribute partition\_expression

This attribute identifies an expression that specifies the partitions for which access is being defined. The expression may use wildcards (i.e. the '\*' and '?' token) to indicates multiple partitions that match the expression.

Full path	OpenSplice/Domain/PartitionAccess/partition_expression
Format	string
Dimension	n.a.
Default value	n.a.
Valid values	Any string of format [A..Z,a..z,0..9, ./,*,?]*
Required	true

#### 1.1.2 Attribute access\_mode

This attribute identifies the access level for partitions specified by the partition\_expression attribute. The following values are allowed:

- read
  - Indicates that applications on this node will only have read access on partitions matching the partition\_expression.
- write
  - Indicates that applications on this node will only have write access on partitions matching the partition\_expression.

- **readwrite**
  - Indicates that applications on this node have read and write access on partitions matching the `partition_expression`.
- **none**
  - Indicates that applications on this node have no access on partitions matching the `partition_expression`.

When multiple expressions overlap each other, the following rules are applied:

Access mode 1	Access mode 2	Resulting access mode
read	write	readwrite
read	readwrite	readwrite
read	none	none
write	readwrite	readwrite
write	none	none
readwrite	none	none

Full path	OpenSplice/Domain/PartitionAccess/access_mode
Format	string
Dimension	n.a.
Default value	n.a.
Valid values	read, write, readwrite, none
Required	true

## 1.2 TopicAccess element

This element is used to configure the access rights for a specific topic on a node. By default all topics have read and write access (builtin topics has a default access mode of read), which means datareaders and datawriters may be created for all topics. However by changing the access level of specific topics it is possible to prevent datawriters and/or datareaders to be created for these topics.

The TopicAccess element facilitates the configuration of such behavior. This is done by allowing the definition of a topic expression along with a specific access mode for that topic.

The TopicAccess element resides as a child element within the Domain element. The exact definition of the TopicAccess element is as follows:

Full path	OpenSplice/Domain/TopicAccess
Occurrences (min-max)	*
Child-elements	<none>
Required attributes	Attribute <code>topic_expression</code> Attribute <code>access_mode</code>
Optional attributes	<none>

An example demonstrates the usage of this element:

```
<OpenSplice>
  <Domain>
    <TopicAccess topic_expression="/remote/*" access_mode="read"/>
  </Domain>
</OpenSplice>
```

### 1.2.1 Attribute `topic_expression`

This attribute identifies an expression that specifies the topics for which access is being defined. The topic may use wildcards (i.e. the '\*' and '?' token) to indicates multiple topics that match the expression.

Full path	OpenSplice/Domain/TopicAccess/topic_expression
Format	string
Dimension	n.a.
Default value	n.a.
Valid values	Any string of format <code>[A..Z,a..z,0..9,_,/,*,?]*</code>

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Required	true
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### 1.2.2 Attribute access\_mode

This attribute identifies the access level for topics defined by the topic\_expression attribute. The following values are allowed:

- read
  - Indicates that applications on this node have only read access on Topics matching the topic\_expression.
- write
  - Indicates that applications on this node have only write access on Topics matching the topic\_expression.
- readwrite
  - Indicates that applications on this node have read and write access on Topics matching the topic\_expression.
- none
  - Indicates that applications on this node have no access to Topics matching the topic\_expression.

When multiple expressions overlap eachother, the following rules are applied:

Access mode 1	Access mode 2	Resulting access mode
read	write	readwrite
read	readwrite	readwrite
read	none	none
write	readwrite	readwrite
write	none	none
readwrite	none	none

Full path	OpenSplice/ Domain/TopicAccess/access_mode
Format	string
Dimension	n.a.
Default value	n.a.
Valid values	read, write, readwrite, none
Required	true

## 2. Reference manual changes

### 2.1 The create\_publisher and create\_subscriber functions

These functions should state at end of the detailed description:

'Alternately DDS\_OBJECT\_NIL can also be returned when insufficient access rights exist for the partition(s) listed in the provided QoS structure.'

### 2.2 Publisher and Subscriber set\_qos functions

An error code precondition\_not\_met should be added as possible return code in the 'Return Value' section.

In the detail description section the following should be added at the end:

If one or more of the partitions in the QoS structure have insufficient access rights configured then the set\_qos function will fail with a precondition\_not\_met error code.

In the 'Return Code' section the following should be added:

DDS\_RETCODE\_PRECONDITION\_NOT\_MET – returned when insufficient access rights exist for the partition(s) listed in the QoS structure.

### **2.3 The create\_datareader function**

At the end of the detailed description it should state:

'In case no read rights are defined for the specific topic then the creation of the datareader will fail.'

### **2.4 The create\_datawriter function**

At the end of the detailed description it should state:

'In case no write rights are defined for the specific topic then the creation of the datawriter will fail.'