

F.9 Ownership

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The [OWNERSHIP policy](#) controls whether the Service allows multiple DataWriter objects to update the same [instance](#) (identified by Topic + [key](#)) of a [data-object](#).

There are two kinds of OWNERSHIP selected by the setting of the kind: SHARED and EXCLUSIVE.

SHARED "kind"

This setting indicates that the Service does not enforce unique ownership for each [instance](#). In this case, multiple writers can update the same data-object instance. The [subscriber](#) to the [Topic](#) will be able to access modifications from all DataWriter objects, subject to the settings of other [QoS](#) that may filter particular samples (e.g., the [TIME_BASED_FILTER](#) or [HISTORY QoS](#) policy). In any case there is no “filtering” of modifications made based on the identity of the DataWriter that causes the modification.

EXCLUSIVE "kind"

This setting indicates that each instance of a data-object can only be modified by one DataWriter. In other words, at any point in time a single DataWriter “owns” each instance and is the only one whose modifications will be visible to the DataReader objects. The owner is determined by selecting the DataWriter with the highest value of the [strength](#) 26 that is both “alive” as defined by the [LIVELINESS QoS](#) policy and has not violated its [DEADLINE](#) contract with regards to the data-instance. Ownership can therefore change as a result of (a) a DataWriter in the system with a higher value of the strength that modifies the instance, (b) a change in the strength value of the DataWriter that owns the instance, (c) a change in the liveliness of the DataWriter that owns the instance, and (d) a deadline with regards to the instance that is missed by the DataWriter that owns the instance.

The behavior of the system is as if the determination was made independently by each DataReader. Each DataReader may detect the change of ownership at a different time. It is not a [requirement](#) that at a particular point in time all the DataReader objects for that Topic have a consistent picture of who owns each instance.

It is also not a requirement that the DataWriter objects are aware of whether they own a particular instance. There is no error or notification given to a DataWriter that modifies an instance it does not currently own.

The requirements are chosen to (a) preserve the decoupling of publishers and subscriber, and (b) allow the policy to be implemented efficiently.

It is possible that multiple DataWriter objects with the same strength modify the same instance. If this occurs the Service will pick one of the DataWriter objects as the “owner.” It is not specified how

the owner is selected. However, it is required that the policy used to select the owner is such that all `DataReader` objects will make the same choice of the particular `DataWriter` that is the owner. It is also required that the owner remains the same until there is a change in strength, liveliness, the owner misses a deadline on the instance, a new `DataWriter` with higher strength modifies the instance, or another `DataWriter` with the same strength that is deemed by the Service to be the new owner modifies the instance.

Exclusive ownership is on an instance-by-instance basis. That is, a subscriber can receive values written by a lower strength `DataWriter` as long as they affect instances whose values have not been set by the higher-strength `DataWriter`.

The value of the `OWNERSHIP` kind offered must exactly match the one requested or else they are considered incompatible.

Source: [DDS 1.4 Spec](#)

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