cosNotification Application

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Contents

1 cosNotification User's Guide ................................................. 1
  1.1 The cosNotification Application ........................................ 1
  1.1.1 Content Overview .............................................. 1
  1.1.2 Brief Description of the User's Guide ............................ 1
  1.2 Introduction to cosNotification ........................................ 1
  1.2.1 Overview ......................................................... 1
  1.3 Installing cosNotification ............................................ 2
  1.3.1 Installation Process ............................................. 2
  1.4 The Notification Service Components .................................. 3
  1.4.1 The Notification Service Components .............................. 3
  1.5 Filters and the Constraint Language BNF ............................. 5
  1.5.1 Filters and the Constraint Language BNF ......................... 5
  1.6 Quality Of Service and Admin Properties ............................ 13
  1.6.1 Quality Of Service and Admin Properties ........................ 13
  1.7 cosNotification Examples .............................................. 16
  1.7.1 A Tutorial on How to Create a Simple Service .................... 16
# cosNotification Reference Manual

## 2.1 CosNotification

- CosNotification

## 2.2 CosNotification

- CosNotificationAdminPropertiesAdmin

## 2.3 CosNotification

- CosNotificationQoSAdmin

## 2.4 CosNotifyChannelAdmin.SequenceProxyPushConsumer

## 2.5 CosNotifyChannelAdmin.SequenceProxyPushSupplier

## 2.6 CosNotifyChannelAdmin.StructuredProxyPullConsumer

## 2.7 CosNotifyChannelAdmin.StructuredProxyPullSupplier

## 2.8 CosNotifyChannelAdmin.StructuredProxyPushConsumer

## 2.9 CosNotifyChannelAdmin.StructuredProxyPushSupplier

## 2.10 CosNotifyChannelAdmin.ConsumerAdmin

## 2.11 CosNotifyChannelAdmin.EventChannel

## 2.12 CosNotifyChannelAdmin.EventChannelFactory

## 2.13 CosNotifyChannelAdmin.ProxyConsumer

## 2.14 CosNotifyChannelAdmin.ProxyPullConsumer

## 2.15 CosNotifyChannelAdmin.ProxyPullSupplier

## 2.16 CosNotifyChannelAdmin.ProxyPushConsumer

## 2.17 CosNotifyChannelAdmin.ProxyPushSupplier

## 2.18 CosNotifyChannelAdmin.ProxySupplier

## 2.19 CosNotifyChannelAdmin.SequenceProxyPullConsumer

## 2.20 CosNotifyChannelAdmin.SequenceProxyPullSupplier

## 2.21 CosNotifyChannelAdmin.SupplierAdmin

## 2.22 CosNotifyComm.NotifyPublish

## 2.23 CosNotifyComm.NotifySubscribe

## 2.24 CosNotifyFilter.Filter

## 2.25 CosNotifyFilter.FilterAdmin

## 2.26 CosNotifyFilter.FilterFactory

## 2.27 CosNotifyFilter.MappingFilter

## 2.28 CosNotificationApp

### List of Figures

- List of Figures 95

### List of Tables

- List of Tables 97
Chapter 1

cosNotification User’s Guide

The cosNotification application is an Erlang implementation of the OMG CORBA Notification Service.

1.1 The cosNotification Application

1.1.1 Content Overview

The cosNotification documentation is divided into three sections:

- PART ONE - The User’s Guide
  Description of the cosNotification Application including services and a small tutorial demonstrating the development of a simple service.

- PART TWO - Release Notes
  A concise history of cosNotification.

- PART THREE - The Reference Manual
  A quick reference guide, including a brief description, to all the functions available in cosNotification.

1.1.2 Brief Description of the User’s Guide

The User’s Guide contains the following parts:

- cosNotification overview
- cosNotification installation
- A tutorial example

1.2 Introduction to cosNotification

1.2.1 Overview

The cosNotification application is a Notification Service compliant with the OMG Notification Service CosNotification.

1URL: http://www.omg.org
Chapter 1: cosNotification User's Guide

Purpose and Dependencies

cosNotification is dependent on Orber-3.1.7 or later, which provides CORBA functionality in an Erlang environment, cosTime-1.0.1 or later and IDL-files to be compiled using IC-4.0.4 or later.

Prerequisites

To fully understand the concepts presented in the documentation, it is recommended that the user is familiar with distributed programming, CORBA and the Orber application.

Recommended reading includes books recommended by the OMG and Open Telecom Platform Documentation Set. It is also helpful to have read Concurrent Programming in Erlang.

1.3 Installing cosNotification

1.3.1 Installation Process

This chapter describes how to install cosNotificationApp [page 90] in an Erlang Environment.

Preparation

Before starting the installation process for cosNotification, the application Orber must be running.

Configuration

When using the Notification Service the cosNotification application first must be installed using cosNotificationApp:install() or cosNotificationApp:install(Seconds), followed by cosNotificationApp:start().

Then the Event Channel Factory [page 57] must be started:

- cosNotificationApp:start_global_factory() - starts and returns a reference to a factory using default configuration parameters. This operation should be used for a multi-node Orber.
- cosNotificationApp:start_global_factory(Options) - starts and returns a reference to a factory using given configuration parameters. This operation should be used for a multi-node Orber.
- cosNotificationApp:start_factory() - starts and returns a reference to a factory using default configuration parameters.
- cosNotificationApp:start_factory(Options) - starts and returns a reference to a factory using given configuration parameters.

The following options exist:

- {pullInterval, Seconds} - determine how often Proxy Pull Consumers will check for new events with the client application. The default value is 20 seconds.
- {filterOp, OperationType} - determine which type of Administrator objects should be started, i.e., 'OR_OP' or 'AND_OP'. The default value is 'OR_OP'.
- {timeService, TimeServiceObj | 'undefined'} - to be able to use Start and/or Stop QoS this option must be used. See the function start_time_service/2 in the cosTime application. The default value is 'undefined'.

2 cosNotification Application
1.4: The Notification Service Components

- \{filterOp, OperationType\} - determine which type of Administrator objects should be started, i.e., ‘OR\_OP’ or ‘AND\_OP’. The default value is ‘OR\_OP’.
- \{gcTime, Seconds\} - this option determines how often, for example, proxies will garbage collect expired events. The default value is 60.
- \{gcLimit, Amount\} - determines how many events will be stored before, for example, proxies will garbage collect expired events. The default value is 50. This option is tightly coupled with the QoS property \text{MaxEventsPerConsumer}, i.e., the \text{gcLimit} should be less than \text{MaxEventsPerConsumer} and greater than 0.

It is possible to define a set of global configuration parameters:

<table>
<thead>
<tr>
<th>Key</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>type_check</td>
<td>true</td>
<td>false</td>
</tr>
<tr>
<td>notify</td>
<td>atom()</td>
<td>false</td>
</tr>
<tr>
<td>max_events</td>
<td>integer() &gt; 0</td>
<td>50</td>
</tr>
<tr>
<td>interval_events</td>
<td>integer() &gt; 0</td>
<td>10000000 milliseconds</td>
</tr>
<tr>
<td>timeout_events</td>
<td>integer() &gt; interval_events</td>
<td>30000000 milliseconds</td>
</tr>
</tbody>
</table>

Table 1.1: Global Configuration Parameters

Comments on the table ‘Global Configuration Parameters’:

- **type_check** Determine if supplied IOR:s shall be type checked, i.e. invoking corba.object:is_a/2, or not.
- **notify** The given value shall point to an existing module exporting a function (arity 1) called terminated. This operation is invoked when a proxy terminates and the argument is a list containing \{proxy, IOR\}, \{client, IOR\} and \{reason, term()\}. The return value is ignored.
- **max_events** If a supplier proxy has not been able to push events to a consumer and the queue exceeds this limit, then the proxy will terminate. For this option to have any effect, the EventReliability and ConnectionReliability QoS parameters must be set to Persistent. For more information, see also the QoS [page 13] chapter.
- **interval_events** The same requirements as for max_events. When a supplier proxy detects problems when trying to push events, this parameter determines how often it should try to call the consumer.
- **timeout_events** The same requirements as for max_events. If the proxy has not been able to contact the consumer and this time-limit is reached, then the proxy will terminate.

The Factory is now ready to use. For a more detailed description see Examples [page 16].

1.4 The Notification Service Components

1.4.1 The Notification Service Components

This chapter describes the Notification Service Components and how they interact.
Components

There are seven components in the OMG Notification Service architecture. These are described below:

- **Event Channel**: acts as a factory for Administrator objects. Allows clients to set Administrative Properties.
- **Supplier Administrators**: acts as a factory for Proxy Consumers. Administrators are started as ‘AND_OP’- or ‘OR_OP’-type, which determines if events must be validated using both the Administrators associated Filter and/or its Proxy children Filters.
- **Consumer Administrators**: acts in the same way as Supplier Administrators but handle Proxy Suppliers.
- **Consumer Proxy**: is connected to a client application. Can be started as Pull or Push object. If the proxy is Push style the client application must push events to the Proxy, otherwise the Proxy is supposed to Pull events. The `CosNotification::AdminProperties` is used to set the pacing interval.

![Figure 1.1: The Notification Service Components.](image)
• Supplier Proxy: Acts in a similar way as the Consumer Proxy, but if started as a Push proxy it will push events to the client application.
• Filters: used to filter events. May be associated with Proxies and Administrators.
• Mapping Filters: used to override events Quality of Service settings. Can only be associated with Consumer Administrators and Proxy Suppliers.

When a Proxy is started it is set to accept CORBA::Any, CosNotification::StructuredEvent or CosNotification::EventBatch (a sequence of structured events).

If a Proxy is supposed to deliver structured events to a client application and receives an CORBA::Any event, the event is converted to a structured event with type_name set to "%ANY" and the event is stored in remainder of body.

If a Proxy is supposed to deliver CORBA::Any events to a client application and receives a structured event, the event is stored in an Any type. The Any Type Code will be equal to the CosNotification::StructuredEvent Type Code.

1.5 Filters and the Constraint Language BNF

1.5.1 Filters and the Constraint Language BNF

This chapter describes, the grammar supported by CosNotifyFilter_Filter [page 79] and CosNotifyFilter_MappingFilter [page 86], and how to create and use filter objects.

How to create filter objects

To be able to filter events we must create a filter and associate it with one, or more, of the administrative or proxy objects. In the example below, we choose to associate the filter with a ConsumerAdmin object.

FilterFactory = cosNotificationApp:start_filter_factory(),
Filter = 'CosNotifyFilter_FilterFactory':
  create_filter(FilterFactory,"EXTENDED_TCL"),
ConstraintInfoSeq = 'CosNotifyFilter_Filter':
  add_constraints(Filter, ConstraintExpSeq),
FilterID = 'CosNotifyChannelAdmin_ConsumerAdmin':
  add_filter(AdminConsumer, Filter),

"EXTENDED_TCL" is the only grammar supported by Orber Notification Service.

Depending on which operation type the Admin object uses, i.e., 'AND_OP' or 'OR_OP', events will be tested using the associated filter. The operation properties are:

• 'AND OP' - must be approved by the proxy's and its parent admin's filters. If all filters associated with an object (Admin or Proxy) return false the event will be discarded. In this situation it is pointless to try and verify with the other object's associated filters since the outcome still would be the same.
• 'OR OP' - if one of the object's (Admin or Proxy) filters return true, the event will not be checked against any other filter associated with a proxy or its parent admin. If a object's associated filters all return false, the event will be forwarded to related proxies/admins, and tested against any associated filters.

cosNotification Application
Initially, filters are empty and will always return true. Hence, we must add constraints by using
'CosNotifyFilter_Filter':add_constraints/2. As input, the second argument must be a sequence of:

```prolog
#'CosNotifyFilter_ConstraintExp'{
    event_types = [#'CosNotification_EventType'{
        domain_name = string(),
        type_name = string()}],
    constraint_expr = string()
}
```

The `event_types` describes which types of events that should be matched using the associated `constraint_expr`.

If a constraint expression is supposed to apply for all events, then the `type_name` can be set to the special event type %ALL in a constraint's event type sequence. The `domain_name` should be "" or "*".

In the following sections we will take a closer look on how to write constraint expressions.

The CosNotification Constraint Language

The constraint language supported by the Notification Service is:

```prolog
<constraint> ::= /* empty */
    | <bool>
<bool> ::= <bool_or>
<bool_or> ::= <bool_or> or <bool_and>
    | <bool_and>
<bool_and> ::= <bool_and> and <bool_compare>
    | <bool_compare>
<bool_compare> ::= <expr_in> == <expr_in>
    | <expr_in> != <expr_in>
    | <expr_in> < <expr_in>
    | <expr_in> <= <expr_in>
    | <expr_in> > <expr_in>
    | <expr_in> >= <expr_in>
    | <expr_in>
<expr_in> ::= <expr_twiddle> in <Ident> /* sequence only */
    | <expr_twiddle>
    | <expr_twiddle> in $ <Component> /* sequence only */
<expr_twiddle> ::= <expr> ~ <expr> /* string data types only */
    | <expr>
<expr> ::= <expr> + <term>
    | <expr> - <term>
    | <term>
<term> ::= <term> * <factor_not>
```
1.5: Filters and the Constraint Language BNF

\[ \text{<factor_not>} := \text{not <factor>} \]
\[ \text{<factor>} := ( \text{<bool_or>}) \]
\[ \text{<bool_or>} := \text{exist <Ident>} \]
\[ \text{<Ident>} \]
\[ \text{<Number>} \]
\[ \text{<String>} \]
\[ \text{TRUE} \]
\[ \text{FALSE} \]
\[ \text{+ <Number>} \]
\[ \text{exist $ <Component>} \]
\[ \text{$ <Component>} \]
\[ \text{default $ <Component>} /* discriminated unions only */ \]

\[ \text{<Component>} := /* empty */ \]
\[ \text{| . <CompDot>} \]
\[ \text{| <CompArray>} \]
\[ \text{| <CompAssoc>} \]
\[ \text{| <Ident> <CompExt> /* run-time variable */} \]

\[ \text{<CompExt>} := /* empty */ \]
\[ \text{| . <CompDot>} \]
\[ \text{| <CompArray>} \]
\[ \text{| <CompAssoc>} \]

\[ \text{<CompDot>} := <Ident> <CompExt> \]
\[ \text{| <CompPos>} \]
\[ \text{| <UnionPos>} \]
\[ \text{| _length} /* only valid for arrays or sequences */ \]
\[ \text{| _d} /* discriminated unions only */ \]
\[ \text{| _type_id} /* only valid if possible to obtain */ \]
\[ \text{| _repos_id} /* only valid if possible to obtain */ \]

\[ \text{<CompArray>} := [ <Digits> ] <CompExt> \]

\[ \text{<CompAssoc>} := ( <Ident> ) <CompExt> \]

\[ \text{<CompPos>} := <Digits> <CompExt> \]

\[ \text{<UnionPos>} := ( <UnionVal> ) <CompExt> \]

\[ \text{<UnionVal>} := /* empty */ \]
\[ \text{| <Digits>} \]
\[ \text{| - <Digits>} \]
\[ \text{| + <Digits>} \]
\[ \text{| <String>} \]

/* Character set issues */
Chapter 1: cosNotification User’s Guide

<Ident> ::= <Leader> <FollowSeq>
    | \ <Leader> <FollowSeq>

<FollowSeq> ::= /* empty */
    | <FollowSeq> <Follow>

:Number> ::= <Mantissa>
    | <Mantissa> <Exponent>

<Mantissa> ::= <Digits>
    | <Digits> .
    | . <Digits>
    | <Digits> . <Digits>

<Exponent> ::= <Exp> <Sign> <Digits>

<Sign> ::= +
    | -

<Exp> ::= E
    | e

<Digits> ::= <Digits> <Digit>
    | <Digit>

<String> ::= ' <TextChars> '

<TextChars> ::= /* empty */
    | <TextChars> <TextChar>

<TextChar> ::= <Alpha>
    | <Digit>
    | <Other>
    | <Special>

<Special> ::= \ \n
| \'

<Leader> ::= <Alpha>

<Follow> ::= <Alpha>
    | <Digit>
    | _

<Alpha> is the set of alphabetic characters [A-Za-z]
<Digit> is the set of digits [0-9]
<Other> is the set of ASCII characters that are not <Alpha>, <Digit>, or <Special>

In the absence of parentheses, the following precedence relations hold:
1. (), exist, default, unary-sign
2. not
The Constraint Language Data Types

The Notification Service Constraint Language, defines how to write constraint expressions, which can be used to filter events. The representation does, however, differ slightly from ordinary Erlang terms. When creating a ConstraintExp, the field constraint_expr must be set to contain a string, e.g., "1 < 2". The Notification Service Constraint Language, is designed to be able to filter structured and unstructured events using the same constraint expression. The Constraint Language Types and Operations can be divided into two sub-groups:

- Basic - arithmetics, strings, constants, numbers etc.
- Complex - accessing members of complex data types, such as unions.

Some of the basic types, e.g., integer, are self explanatory. Hence, they are not described further.

<table>
<thead>
<tr>
<th>Type/Operation</th>
<th>Examples</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>&quot;'MyString'&quot;</td>
<td>Strings are represented as a sequence of zero or more (&lt;\text{TextChar}&gt;)s enclosed in single quotes, e.g., 'string'.</td>
</tr>
<tr>
<td>~</td>
<td>&quot;'String1' ~ 'String2'&quot;</td>
<td>The operator &quot;is called the substring operator and mean &quot;String1 is contained within String2&quot;.</td>
</tr>
<tr>
<td>boolean</td>
<td>&quot;TRUE == (('lang' ~ 'Erlang' + 'fun' ~ 'functional') &gt;= 2)&quot;</td>
<td>Booleans may only be TRUE or FALSE, i.e., only capital letters. Expressions which evaluate to TRUE or FALSE can be summed up and matched, where TRUE equals 1 and FALSE 0.</td>
</tr>
<tr>
<td>sequence</td>
<td>&quot;myIntegerSequence[2]&quot;</td>
<td>The BNF use C/C++ notation, i.e., the example will return the third element.</td>
</tr>
<tr>
<td>length</td>
<td>&quot;myIntegerSequence.length&quot;</td>
<td>Returns the length of an sequence or array.</td>
</tr>
<tr>
<td>in</td>
<td>&quot;'Erlang' in $.FunctionalLanguagesStringSeq&quot;</td>
<td>Returns TRUE if a given element is found in the given sequence. The element must be of a simple type and the same as the sequence is defined to contain.</td>
</tr>
</tbody>
</table>

*continued*
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>$ = &quot;$ == 40&quot;</code></td>
<td>Denote the current event as well as any run-time variables. If the event is unstructured and its contained value 40, the example will return TRUE.</td>
</tr>
<tr>
<td><code>$.MyStructMember == 40&quot;</code></td>
<td>The structure member operator may be used to reference its members when the data refers to a named structure, discriminated union, or CORBA::Any data structure.</td>
</tr>
<tr>
<td><code>$.type_id == 'MyStruct'&quot;</code></td>
<td>Returns the unscoped IDL type name of the component. This operation is only valid if said information can be obtained.</td>
</tr>
<tr>
<td><code>$.repos_id == 'IDL:MyModule/MyStruct:1.0'&quot;</code></td>
<td>Returns the RepositoryId of the component. This operation is only valid if said information can be obtained.</td>
</tr>
<tr>
<td><code>$.eventUnion._d&quot;</code></td>
<td>May only be used when accessing discriminated unions and refers to the discriminator.</td>
</tr>
<tr>
<td><code>exist $.eventUnion._d and $.eventUnion._d == 10&quot;</code></td>
<td>To avoid that a filtering of an event fails due to that, for example, we try to compare a union discriminator which does not exist, we can use this operator.</td>
</tr>
<tr>
<td><code>default $.eventUnion._d&quot;</code></td>
<td>If the operation is in conjunction with the default operation, TRUE will be returned if the union has a default member that is active.</td>
</tr>
<tr>
<td><code>$.() == 5&quot; eq $.('zero') == 5&quot;</code></td>
<td>When the component refers to a union, with one of the cases defined as case 0: short zero;, we use 0 or 'zero'. The result of the example is TRUE if the union has a discriminator set to 0 and the value 5. If more than one case is defined to be 'zero', $.('zero') accepts both; $.() only returns TRUE if the discriminator is set to 0. Leaving out the identifier, i.e., .(), refers to the default value.</td>
</tr>
</tbody>
</table>
The Notification service makes extensive use of name-value pairs sequences within structured events, which allow us to access its value, as shown in the example.

<table>
<thead>
<tr>
<th>Table 1.2: Table 1: Type and Operator Examples</th>
</tr>
</thead>
</table>

In the next section we will take a closer look at how it is possible to write constraints using different types of notation etc.

Accessing Data In Events

To filter events, the supplied constraints must describe the contents of the events and desired values. We can, for example, state that we are only interested in receiving events which are of type CommunicationsAlarm. To be able to achieve this, the constraint must contain information that points out which fields to compare with. Figure one illustrates a conceptual overview of a structured event. The exact definition is found in the CosNotification.idl file.

The Notification Service supports different constraint expressions notation:

- Fully scoped, e.g., "$.header.fixed_header.event_type.type_name == 'CommunicationsAlarm'
- Short hand, e.g., "$type_name == 'CommunicationsAlarm'
- Positional Notation, e.g., "$0.0.0.1 == 'CommunicationsAlarm'"
Note:
Which notation to use is up to the user, however, the fully scoped may be easier to understand, but in some cases, if received from an ORB that do not populate ID:s of named parts, the positional notation is the only option.

Note:
If a constraint, which access fields in a structured event structure, is supposed to handle unstructured events as well, the CORBA::Any must contain the same type of members.

How to filter against the fixed header fields, is described in the table below.

<table>
<thead>
<tr>
<th>Field</th>
<th>Fully Scoped Constraint</th>
<th>Short Hand Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>type_name</td>
<td>&quot;$.header.fixed_header.event_type.type_name == 'Type'&quot;</td>
<td>&quot;$type_name == 'Type'&quot;</td>
</tr>
<tr>
<td>domain_name</td>
<td>&quot;$.header.fixed_header.event_type.domain_name == 'Domain'&quot;</td>
<td>&quot;$domain_name == 'Domain'&quot;</td>
</tr>
<tr>
<td>event_name</td>
<td>&quot;$.header.fixed_header.event_name == 'Event'&quot;</td>
<td>&quot;$event_name == 'Event'&quot;</td>
</tr>
</tbody>
</table>

Table 1.3: Table 2: Fixed Header Constraint Examples

If we are only interested in receiving events regarding 'Domain', 'Event' and 'Type', the constraint can look like "$domain_name == 'Domain' and $event_name == 'Event' and $type_name == 'Type'".

The variable event header consists of a sequence of name-value pairs. One way to filter on these are to use a constraint that looks like "($.header.variable_header[1].name == 'priority' and $.header.variable_header[1].value > 0)". An easier way to accomplish the same result is to use a constraint that treats the name-value pair as an associative array, i.e., when given a name the corresponding value is returned. Hence, instead we can use "$.header.variable_header[priority] > 0".

Accessing the event body is done in the same way as for the event header fields. The user must, however, be aware of, that if a run-time variable ($variable) is used data in the event header may take precedence. The order of precedence is:

1. Reserved, e.g., $curtime
2. A simple-typed member of $.header.fixed_header.
3. Properties in $.header.variable_header.
4. Properties in $.filterable_data.
5. If no match is found it is translated to $.variable.
Mapping Filters

Mapping Filters may only be associated with Consumer Administrators or Proxy Suppliers. The purpose of a Mapping Filter is to override Quality of Service settings.

Initially, Mapping Filters are empty and will always return true. Hence, we must add constraints by using 'CosNotifyFilter_MappingFilter':add_mapping_constraints/2. If a constraint matches, the associated value will be used instead of the related Quality of Service system settings.

As input, the second argument must be a sequence of:

#'CosNotifyFilter_MappingConstraintPair'{
  constraint_expression = #'CosNotifyFilter_ConstraintExp'{
    event_types = [#'CosNotification_EventType'{
      domain_name = string(),
      type_name = string()},
      constraint_expr = string()],
    result_to_set = any()}

1.6 Quality Of Service and Admin Properties

1.6.1 Quality Of Service and Admin Properties

This chapter explains the allowed properties for CosNotification_QoSAdmin [page 37] and CosNotification_AdminPropertiesAdmin [page 36].

Quality Of Service

The cosNotification application supports the following QoS settings:

<table>
<thead>
<tr>
<th>QoS</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>EventReliability</td>
<td>BestEffort/Persistent</td>
<td>BestEffort</td>
</tr>
<tr>
<td>ConnectionReliability</td>
<td>BestEffort/Persistent</td>
<td>BestEffort</td>
</tr>
<tr>
<td>Priority</td>
<td>+/-32767</td>
<td>0</td>
</tr>
<tr>
<td>OrderPolicy</td>
<td>Any-, Fifo-, Priority- and Deadline-Order</td>
<td>PriorityOrder</td>
</tr>
<tr>
<td>DiscardPolicy</td>
<td>RejectNewEvents, Any-, Fifo-, Lifo-, Priority- and Deadline-Order</td>
<td>RejectNewEvents</td>
</tr>
<tr>
<td>MaximumBatchSize</td>
<td>long() &gt; 0</td>
<td>1</td>
</tr>
<tr>
<td>PacingInterval</td>
<td>TimeBase::TimeT (see cosTime)</td>
<td>0</td>
</tr>
<tr>
<td>StartTimeSupported</td>
<td>boolean</td>
<td>false</td>
</tr>
<tr>
<td>StopTimeSupported</td>
<td>boolean</td>
<td>false</td>
</tr>
<tr>
<td>MaxEventsPerConsumer</td>
<td>long() &gt; 0</td>
<td>100</td>
</tr>
<tr>
<td>Timeout</td>
<td>TimeBase::TimeT (see cosTime)</td>
<td>No timeout</td>
</tr>
</tbody>
</table>

Table 1.4: Table 1: Supported QoS Settings
Comments on the table ‘Supported QoS Settings’:

**EventReliability**  To allow full Persistent EventReliability, every event must be stored in a stable storage which would create a relatively huge overhead. Hence, only lightweight version of the Persistent QoS is supported. The configuration parameters `max_events`, `interval_events` and `timeout_events` determine the behavior of this setting.

**ConnectionReliability** If this QoS is set to BestEffort and a client object returns anything other than `ok` to its associated Proxy, the Proxy will discard all events and terminate. Using Persistent and anything other than `ok` is returned, events will be dropped but the proxy will retry later when next delivery is due. A child may not have Persistent while its parent has BestEffort QoS set, e.g., Proxy vs. Admin. If `OBJECT NOT_EXIST`, `NO_PERMISSION` or `CosEventComm_Disconnected` is thrown, the associated object will terminate even if this parameter is set to Persistent.

**Priority** This QoS will treat all events as if they have the Priority equal to current value, unless the event itself contains a Priority setting, this event will be treated accordingly. Note: for this property to have any effect, the DiscardPolicy and/or OrderPolicy must be set to PriorityOrder.

**OrderPolicy** If set to PriorityOrder, events with the highest Priority will be delivered first. Deadline order will forward events with shortest expiry time first. If two events have the same priority, they will be delivered in FIFO-order.

**DiscardPolicy** If set to PriorityOrder and MaxEventsPerConsumer limit is reached, events with the lowest Priority will be discarded first. Deadline order will discard events with shortest expiry time first.

**MaximumBatchSize** Only valid if the object is supposed to handle a sequence of structured events and determines the largest amount of events that may be passed each time.

**PacingInterval** Determines how long an object will wait before forwarding a structured event sequence of length equal to, or less than MaximumBatchSize. If set to 0, which is the default behavior, no timeout is used and the events are forwarded when the MaximumBatchSize is reached.

**StartTimeSupported** If set to true events which contains the QoS Property `StartTime` (TimeBase::UtcT - absolute time) will not be delivered until the StartTime value have been exceeded. See also the `cosTime` application.

**StopTimeSupported** If set to true, events which contain the QoS Properties `StopTime` (TimeBase::UtcT - absolute time) or `Timeout` (TimeBase::TimeT - relative time) will be discarded if the object has not been able to deliver the event in time. See also the `cosTime` application.

**MaxEventsPerConsumer** The maximum number of events the associated object may store before discarding events in the way described by the DiscardPolicy.

**Timeout** If this QoS property is not included in the event, and the Property StopTimeSupported equals true, this setting will be applied if events cannot be delivered within its time limit.

**Warning:**
Several of the above QoS Properties can be changed during run-time but we strongly advice not to since, if a relatively large amount of events are waiting for delivery, some of the QoS settings would require a total reorder of the events. The QoS property ConnectionReliability may never be updated during run-time since it may cause deadlock. Run-time, in this case, means activating the Channel by sending the first event.
Setting Quality Of Service

Assume we have a Consumer Admin object which we want to change the current Quality of Service.

Typical usage:

```java
QoSPersistent =
    [#'CosNotification_Property' = {name='CosNotification':'ConnectionReliability'(),
     value=any:create(orber_tc:short(),
     'CosNotification':'Persistent'())},]
'CosNotification_QoSAdmin':set_qos(Ch, QoSPersistent),
```

If it is not possible to set the requested QoS the UnsupportedQoS exception is raised, which includes a sequence of PropertyError's describing which QoS, possible range and why is not allowed. The error codes are:

- UNSUPPORTED_PROPERTY - QoS not supported for this type of target object.
- UNAVAILABLE_PROPERTY - due to current QoS settings the given property is not allowed.
- UNSUPPORTED_VALUE - property value out of range; valid range is returned.
- UNAVAILABLE_VALUE - due to current QoS settings the given value is not allowed; valid range is returned.
- BAD_PROPERTY - unrecognized property.
- BAD_TYPE - type of supplied property is incorrect.
- BAD_VALUE - illegal value.

The CosNotification_QoSAdmin interface also supports an operation called validate_qos/2. The purpose of this operation is to check if a QoS setting is supported by the target object and if so, the operation returns additional properties which could be optionally added as well.

Admin Properties

The cosNotification application supports the following Admin Properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxQueueLength</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MaxConsumers</td>
<td>long() &gt;= 0</td>
<td>0</td>
</tr>
<tr>
<td>MaxSuppliers</td>
<td>long() &gt;= 0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1.5: Table 2: Supported Admin Properties

According to the OMG specification the default values for Admin Properties is supposed to be 0, which means that no limit applies to these properties.
1.7 cosNotification Examples

1.7.1 A Tutorial on How to Create a Simple Service

Interface Design

To use the cosNotification application clients must be implemented. There are twelve types of clients:

- Structured Push Consumer
- Sequence Push Consumer
- Any Push Consumer
- Structured Pull Consumer
- Sequence Pull Consumer
- Any Pull Consumer
- Structured Push Supplier
- Sequence Push Supplier
- Any Push Supplier
- Structured Pull Supplier
- Sequence Pull Supplier
- Any Pull Supplier

The interfaces for these participants are defined in CosNotification.idl and CosNotifyComm.idl.

Generating a Client Interface

We start by creating an interface which inherits from the correct interface, e.g., CosNotifyComm::SequencePushConsumer. Hence, we must also implement all operations defined in the SequencePushConsumer interface. The IDL-file could look like:

```idl
#ifndef _MYCLIENT_IDL
#define _MYCLIENT_IDL
#include <CosNotification.idl>
#include <CosNotifyComm.idl>

module myClientImpl {

    interface ownInterface:CosNotifyComm::SequencePushConsumer {

        void ownFunctions(in any NeededArguments)
        raises(Systemexceptions,OwnExceptions);
    }
}
```

Note:
Admin Properties can only be set on a Channel Object level, i.e., they will not have an impact on any Admin or Proxy Objects. Currently, setting the Admin Property MaxQueueLength have no effect since we cannot discard events accordingly to the Quality of Service Property DiscardPolicy.
Run the IDL compiler on this file by calling the `ic:gen/1` function. This will produce the API named `myClientImpl/ownInterface.erl`. After generating the API stubs and the server skeletons it is time to implement the servers and if no special options are sent to the IDL compiler the file name is `myClientImpl/ownInterface_impl.erl.`

The callback module must contain the necessary functions inherited from `CosNotification.idl` and `CosNotifyComm.idl`.

How to Run Everything

Below is a short transcript on how to run `cosNotification`.

```erlang
%% Start Mnesia and Orber
mnesia:delete_schema([node()]),
mnesia:create_schema([node()]),
orber:install([node()]),
mnesia:start(),
orber:start(),

%% If cosEvent not installed before it is necessary to do it now.
cosEventApp:install(),

%% Install `cosNotification` in the IFR.
cosNotificationApp:install(30),

%% Register the application specific Client implementations
%% in the IFR.
'oe_myClientImpl': 'oe_register',

%% Start the `cosNotification` application.
cosNotificationApp:start(),

%% Start a factory using the default configuration
ChFac = cosNotificationApp:start_factory(),
%% ... or use configuration parameters.
ChFac = cosNotificationApp:start_factory([],

%% Create a new event channel. Note, if no QoS- anr/or Admin-properties
%% are supplied (i.e. empty list) the default settings are used.
{Ch, ChID} = 'CosNotifyChannelAdmin_EventChannelFactory':
create_channel(ChFac, DefaultQoS, DefaultAdmin),

%% Retrieve a SupplierAdmin and a Consumer Admin.
{AdminSupplier, ASID} =
'CosNotifyChannelAdmin_EventChannel':new_for_suppliers(Ch, 'OR_OP'),
{AdminConsumer, ACID} =
'CosNotifyChannelAdmin_EventChannel':new_for_consumers(Ch,'OR_OP'),
```
%% Use the corresponding Admin object to get access to wanted Proxies

%% Create a Push Consumer Proxie, i.e., the Client Push Supplier will
%% push events to this Proxy.
{StructuredProxyPushConsumer,ID11}= 'CosNotifyChannelAdmin_SupplierAdmin':
    obtain_notification_push_consumer(AdminSupplier, 'STRUCTURED_EVENT'),

%% Create Push Suppliers Proxies, i.e., the Proxy will push events to the
%% registered Push Consumers.
{ProxyPushSupplier,I4D}='CosNotifyChannelAdmin_ConsumerAdmin':
    obtain_notification_push_supplier(AdminConsumer, 'ANY_EVENT'),
{StructuredProxyPushSupplier,ID5}='CosNotifyChannelAdmin_ConsumerAdmin':
    obtain_notification_push_supplier(AdminConsumer, 'STRUCTURED_EVENT'),
{SequenceProxyPushSupplier,ID6}='CosNotifyChannelAdmin_ConsumerAdmin':
    obtain_notification_push_supplier(AdminConsumer, 'SEQUENCE_EVENT'),

%% Create application Clients. We can, for example, start the Clients
%% our selves or look them up in the naming service. This is application
%% specific.
SupplierClient = ...
ConsumerClient1 = ...
ConsumerClient2 = ...
ConsumerClient3 = ...

%% Connect each Client to corresponding Proxy.
'CosNotifyChannelAdmin_StructuredProxyPushConsumer':
    connect_structured_push_supplier(StructuredProxyPushConsumer, SupplierClient),
'CosNotifyChannelAdmin_ProxyPushSupplier':
    connect_any_push_consumer(ProxyPushSupplier, ConsumerClient1),
'CosNotifyChannelAdmin_StructuredProxyPushSupplier':
    connect_structured_push_consumer(StructuredProxyPushSupplier, ConsumerClient2),
'CosNotifyChannelAdmin_SequenceProxyPushSupplier':
    connect_sequence_push_consumer(SequenceProxyPushSupplier, ConsumerClient3),

The example above, exemplifies a notification system where the SupplierClient in some way generates
event and pushes them to the proxy. The push supplier proxies will eventually push the events to each
ConsumerClient.
Short Summaries

- Erlang Module `CosNotification` [page 33] - This module exports functions which return QoS and Admin Properties constants.
- Erlang Module `CosNotification_AdminPropertiesAdmin` [page 36] - This module implements the OMG `CosNotification::AdminPropertiesAdmin` interface.
- Erlang Module `CosNotification_QoSAdmin` [page 37] - This module implements the OMG `CosNotification::QoSAdmin` interface.
- Erlang Module `CosNotifyChannelAdmin_SequenceProxyPushConsumer` [page 39] - This module implements the OMG `CosNotifyChannelAdmin::SequenceProxyPushConsumer` interface.
- Erlang Module `CosNotifyChannelAdmin_SequenceProxyPushSupplier` [page 41] - This module implements the OMG `CosNotifyChannelAdmin::SequenceProxyPushSupplier` interface.
- Erlang Module `CosNotifyChannelAdmin_StructuredProxyPullConsumer` [page 43] - This module implements the OMG `CosNotifyChannelAdmin::StructuredProxyPullConsumer` interface.
- Erlang Module `CosNotifyChannelAdmin_StructuredProxyPullSupplier` [page 45] - This module implements the OMG `CosNotifyChannelAdmin::StructuredProxyPullSupplier` interface.
- Erlang Module `CosNotifyChannelAdmin_StructuredProxyPushConsumer` [page 47] - This module implements the OMG `CosNotifyChannelAdmin::StructuredProxyPushConsumer` interface.
- Erlang Module `CosNotifyChannelAdmin_StructuredProxyPushSupplier` [page 49] - This module implements the OMG `CosNotifyChannelAdmin::StructuredProxyPushSupplier` interface.
- Erlang Module `CosNotifyChannelAdmin_ConsumerAdmin` [page 51] - This module implements the OMG `CosNotifyChannelAdmin::ConsumerAdmin` interface.
- Erlang Module `CosNotifyChannelAdmin_EventChannel` [page 54] - This module implements the OMG `CosNotifyChannelAdmin::EventChannel` interface.
- Erlang Module `CosNotifyChannelAdmin_EventChannelFactory` [page 57] - This module implements the OMG `CosNotifyChannelAdmin::EventChannelFactory` interface.
Erlang Module **CosNotifyChannelAdmin::ProxyConsumer** [page 58] - This module implements the OMG *CosNotifyChannelAdmin::ProxyConsumer* interface.

Erlang Module **CosNotifyChannelAdmin::ProxyPullConsumer** [page 60] - This module implements the OMG *CosNotifyChannelAdmin::ProxyPullConsumer* interface.

Erlang Module **CosNotifyChannelAdmin::ProxyPullSupplier** [page 62] - This module implements the OMG *CosNotifyChannelAdmin::ProxyPullSupplier* interface.

Erlang Module **CosNotifyChannelAdmin::ProxyPushConsumer** [page 64] - This module implements the OMG *CosNotifyChannelAdmin::ProxyPushConsumer* interface.

Erlang Module **CosNotifyChannelAdmin::ProxyPushSupplier** [page 65] - This module implements the OMG *CosNotifyChannelAdmin::ProxyPushSupplier* interface.

Erlang Module **CosNotifyChannelAdmin::ProxySupplier** [page 67] - This module implements the OMG *CosNotifyChannelAdmin::ProxySupplier* interface.

Erlang Module **CosNotifyChannelAdmin::SequenceProxyPullConsumer** [page 70] - This module implements the OMG *CosNotifyChannelAdmin::SequenceProxyPullConsumer* interface.

Erlang Module **CosNotifyChannelAdmin::SequenceProxyPullSupplier** [page 72] - This module implements the OMG *CosNotifyChannelAdmin::SequenceProxyPullSupplier* interface.

Erlang Module **CosNotifyChannelAdmin::SupplierAdmin** [page 74] - This module implements the OMG *CosNotifyChannelAdmin::SupplierAdmin* interface.

Erlang Module **CosNotifyComm::NotifyPublish** [page 77] - This module implements the OMG *CosNotifyComm::NotifyPublish* interface.

Erlang Module **CosNotifyComm::NotifySubscribe** [page 78] - This module implements the OMG *CosNotifyComm::NotifySubscribe* interface.

Erlang Module **CosNotifyFilter::Filter** [page 79] - This module implements the OMG *CosNotifyFilter::Filter* interface.

Erlang Module **CosNotifyFilter::FilterAdmin** [page 83] - This module implements the OMG *CosNotifyFilter::FilterAdmin* interface.

Erlang Module **CosNotifyFilter::FilterFactory** [page 85] - This module implements the OMG *CosNotifyFilter::FilterFactory* interface.

Erlang Module **CosNotifyFilter::MappingFilter** [page 86] - This module implements the OMG *CosNotifyFilter::MappingFilter* interface.

Erlang Module **cosNotificationApp** [page 90] - The main module of the cosNotification application.

### CosNotification

The following functions are exported:

- `EventReliability()` -> **string()**
  [page 33] Return the EventReliability QoS identifier

- `BestEffort()` -> **short()**
  [page 33] Return the BestEffort QoS value
- 'Persistent'() -> short()  
  [page 33] Return the Persistent QoS value
- 'ConnectionReliability'() -> string()  
  [page 33] Return the ConnectionReliability QoS identifier
- 'Priority'() -> string()  
  [page 33] Return the Priority QoS identifier
- 'LowestPriority'() -> short()  
  [page 33] Return the LowestPriority QoS value
- 'HighestPriority'() -> short()  
  [page 33] Return the HighestPriority QoS value
- 'DefaultPriority'() -> short()  
  [page 33] Return the DefaultPriority QoS value
- 'StartTime'() -> string()  
  [page 33] Return the StartTime QoS identifier
- 'StopTime'() -> string()  
  [page 33] Return the StopTime QoS identifier
- 'Timeout'() -> string()  
  [page 34] Return the Timeout QoS identifier
- 'OrderPolicy'() -> string()  
  [page 34] Return the OrderPolicy QoS identifier
- 'AnyOrder'() -> short()  
  [page 34] Return the AnyOrder QoS value
- 'FifoOrder'() -> short()  
  [page 34] Return the FifoOrder QoS value
- 'PriorityOrder'() -> short()  
  [page 34] Return the PriorityOrder QoS value
- 'DeadlineOrder'() -> short()  
  [page 34] Return the DeadlineOrder QoS value
- 'DiscardPolicy'() -> string()  
  [page 34] Return the DiscardPolicy QoS identifier
- 'LifoOrder'() -> short()  
  [page 34] Return the LifoOrder QoS value
- 'RejectNewEvents'() -> short()  
  [page 34] Return the RejectNewEvents QoS value
- 'MaximumBatchSize'() -> string()  
  [page 34] Return the MaximumBatchSize QoS identifier
- 'PacingInterval'() -> string()  
  [page 34] Return the PacingInterval QoS identifier
- 'StartTimeSupported'() -> string()  
  [page 34] Return the StartTimeSupported QoS identifier
- 'StopTimeSupported'() -> string()  
  [page 34] Return the StopTimeSupported QoS identifier
- 'MaxEventsPerConsumer'() -> string()  
  [page 34] Return the MaxEventsPerConsumer QoS identifier
- 'MaxQueueLength'() -> string()  
  [page 35] Return the MaxQueueLength Admin identifier
CosNotification_AdminPropertiesAdmin

The following functions are exported:

- `get_admin(Object) -> AdminProperties`
  - Return a list of AdminProperties associated with the target object
- `set_admin(Object, AdminProperties) -> Reply`
  - Update the AdminProperties for the target object

CosNotification_QoSAdmin

The following functions are exported:

- `get_qos(Object) -> Reply`
  - Return a list of name-value pairs which encapsulates the current QoS settings for the target object
- `set_qos(Object, QoS) -> Reply`
  - Change the QoS settings for the target object
- `validate_qos(Object, QoS) -> Reply`
  - Validate if the supplied QoS properties is valid for the target object

CosNotifyChannelAdmin_SequenceProxyPushConsumer

The following functions are exported:

- `connect_sequence_push_supplier(SequenceProxyPushConsumer, PushSupplier) -> Reply`
  - Connect a supplier to the proxy
- `push_structured_events(SequenceProxyPushConsumer, EventBatch) -> Reply`
  - Push a structured event to the proxy
- `disconnect_sequence_push_consumer(SequenceProxyPushConsumer) -> ok`
  - Close connection and terminate the proxy
CosNotifyChannelAdmin_SequenceProxyPushSupplier

The following functions are exported:

- connect_sequence_push_consumer(SequenceProxyPushSupplier, PullConsumer) -> Reply
  [page 41] Connect a consumer to the proxy
- suspend_connection(SequenceProxyPushSupplier) -> Reply
  [page 41] Suspend the connection between the client and the target object
- resume_connection(SequenceProxyPushSupplier) -> Reply
  [page 41] Resume a previously suspended connection with the proxy
- disconnect_sequence_push_supplier(SequenceProxyPushSupplier) -> ok
  [page 42] Close the connection and terminate the proxy

CosNotifyChannelAdmin_StructuredProxyPullConsumer

The following functions are exported:

- connect_structured_pull_supplier(StructuredProxyPullConsumer, PullSupplier) -> Reply
  [page 43] Connect a supplier to the proxy
- suspend_connection(StructuredProxyPullConsumer) -> Reply
  [page 43] Suspend the connection between the target object and its client
- resume_connection(StructuredProxyPullConsumer) -> Reply
  [page 43] Resume a previously suspended connection with the proxy
- disconnect_structured_pull_consumer(StructuredProxyPullConsumer) -> ok
  [page 44] Close the connection and terminate the proxy

CosNotifyChannelAdmin_StructuredProxyPullSupplier

The following functions are exported:

- connect_structured_pull_consumer(StructuredProxyPullSupplier, PullConsumer) -> Reply
  [page 45] Connect a consumer to the proxy
- pull_structured_event(StructuredProxyPullSupplier) -> Reply
  [page 45] Pull a structured event from the proxy
- try_pull_structured_event(StructuredProxyPullSupplier) -> Reply
  [page 46] Try to pull a structured event from the proxy
- disconnect_structured_pull_supplier(StructuredProxyPullSupplier) -> ok
  [page 46] Close connection and terminate the proxy
CosNotifyChannelAdmin_StructuredProxyPushConsumer

The following functions are exported:

- `connect_structured_push_supplier(StructuredProxyPushConsumer, PushSupplier) -> Reply`
  [page 47] Connect a supplier to the proxy
- `push_structured_event(StructuredProxyPushConsumer, StructuredEvent) -> Reply`
  [page 47] Push a structured event to the proxy
- `disconnect_structured_push_consumer(StructuredProxyPushConsumer) -> ok`
  [page 48] Close the connection and terminate the proxy

CosNotifyChannelAdmin_StructuredProxyPushSupplier

The following functions are exported:

- `connect_structured_push_consumer(StructuredProxyPushSupplier, PushConsumer) -> Reply`
  [page 49] Connect a consumer to the proxy
- `suspend_connection(StructuredProxyPushSupplier) -> Reply`
  [page 49] Suspend the connection with the target object
- `resume_connection(StructuredProxyPushSupplier) -> Reply`
  [page 49] Resume a previously suspended connection
- `disconnect_structured_push_supplier(StructuredProxyPushSupplier) -> ok`
  [page 50] Close the connection and terminate the target object

CosNotifyChannelAdmin_ConsumerAdmin

The following functions are exported:

- `_get_MyID(ConsumerAdmin) -> AdminID`
  [page 51] Return the target object’s Id
- `_get_MyChannel(ConsumerAdmin) -> Channel`
  [page 51] Return the ancestor channel
- `_get_MyOperator(ConsumerAdmin) -> OpType`
  [page 51] Return the filtering schema used by the target object
- `_get_priority_filter(ConsumerAdmin) -> MappingFilter`
  [page 51] Return the associated priority MappingFilter
- `_set_priority_filter(ConsumerAdmin, MappingFilter) -> ok`
  [page 52] Set the priority MappingFilter
- `_get_lifetime_filter(ConsumerAdmin) -> MappingFilter`
  [page 52] Return the associated lifetime MappingFilter
- `_set_lifetime_filter(ConsumerAdmin, MappingFilter) -> ok`
  [page 52] Set the lifetime MappingFilter
- `_get_pull_suppliers(ConsumerAdmin) -> ProxyIDSeq`
  [page 52] Return a list of all associated pull supplier Id:s
get _push_suppliers(ConsumerAdmin) -> ProxyIDSeq
[page 52] Return a list of all associated push supplier Id:s

get _proxy_supplier(ConsumerAdmin, ProxyID) -> Reply
[page 52] Return the proxy supplier with matching Id

obtain _notification _pull_supplier(ConsumerAdmin, ConsumerType) -> Reply
[page 53] Create a supplier proxy

obtain _pull_supplier(ConsumerAdmin) -> Proxy
[page 53] Create a supplier proxy

obtain _notification _push_supplier(ConsumerAdmin, ConsumerType) -> Reply
[page 53] Create a supplier proxy

obtain _push_supplier(ConsumerAdmin) -> Proxy
[page 53] Create a supplier proxy

destroy(ConsumerAdmin) -> ok
[page 53] Terminate the target object and all its children

CosNotifyChannelAdmin _EventChannel

The following functions are exported:

get _MyFactory(Channel) -> ChannelFactory
[page 54] Return the factory object which created the target object

get _default _consumer _admin(Channel) -> ConsumerAdmin
[page 54] Return the default consumer admin associated with the target object

get _default _supplier _admin(Channel) -> SupplierAdmin
[page 54] Return the default supplier admin associated with the target object

get _default _filter _factory(Channel) -> FilterFactory
[page 54] Return the default filter factory associated with the target object

new _for _consumers(Channel, OpType) -> Return
[page 55] Create a new ConsumerAdminobject

for _consumers(Channel) -> ConsumerAdmin
[page 55] Create a new ConsumerAdminobject

new _for _suppliers(Channel, OpType) -> Return
[page 55] Create a new SupplierAdminobject

for _suppliers(Channel) -> SupplierAdmin
[page 55] Create a new SupplierAdminobject

get _consumer _admin(Channel, AdminID) -> ConsumerAdmin
[page 55] Return the ConsumerAdminmatching AdminID

get _supplier _admin(Channel, AdminID) -> SupplierAdmin
[page 56] Return the SupplierAdminmatching AdminID

get _all _consumer _admins(Channel) -> Reply
[page 56] Return a list of all ConsumerAdmins, currently active, Id:s

get _all _supplier _admins(Channel) -> Reply
[page 56] Return a list of all SupplierAdmins, currently active, Id:s

destroy(Channel) -> ok
[page 56] Terminate the channel and all its children

CosNotification Application
CosNotifyChannelAdmin_EventChannelFactory

The following functions are exported:

- create_channel(\textbf{ChannelFactory}, \textbf{InitialQoS}, \textbf{InitialAdmin}) \rightarrow \textbf{Return} \hspace{1cm} \textit{[page 57] Create a new channel}
- get_all_channels(\textbf{ChannelFactory}) \rightarrow \textbf{ChannelIDSeq} \hspace{1cm} \textit{[page 57] Return all Id:s for channels, currently alive, created by the target object}
- get_event_channel(\textbf{ChannelFactory}, \textbf{ChannelID}) \rightarrow \textbf{Return} \hspace{1cm} \textit{[page 57] Return the channel object associated with the given Id}

CosNotifyChannelAdmin_ProxyConsumer

The following functions are exported:

- \_get\_MyType(\textbf{ProxyConsumer}) \rightarrow \textbf{ProxyType} \hspace{1cm} \textit{[page 58] Return the proxy type}
- \_get\_MyAdmin(\textbf{ProxyConsumer}) \rightarrow \textbf{AdminObject} \hspace{1cm} \textit{[page 58] Return the associated Adminobject}
- obtain\_subscription\_types(\textbf{ProxyConsumer}, \textbf{ObtainInfoMode}) \rightarrow \textbf{EventTypeSeq} \hspace{1cm} \textit{[page 58] Administer subscription types}
- validate\_event\_qos(\textbf{ProxyConsumer}, \textbf{QoSProperties}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 59] Check if certain Quality of Service properties can be added to events in the current context of the target object}

CosNotifyChannelAdmin_ProxyPullConsumer

The following functions are exported:

- connect\_any\_pull\_supplier(\textbf{ProxyPullConsumer}, \textbf{PullSupplier}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 60] Connect a supplier to the proxy}
- suspend\_connection(\textbf{ProxyPullConsumer}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 60] Suspend the connection between the client and the proxy}
- resume\_connection(\textbf{ProxyPullConsumer}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 60] Resume a previously suspended connection with the proxy}
- disconnect\_pull\_consumer(\textbf{ProxyPullConsumer}) \rightarrow \textbf{ok} \hspace{1cm} \textit{[page 61] Close the connection and terminate the proxy}

CosNotifyChannelAdmin_ProxyPullSupplier

The following functions are exported:

- connect\_any\_pull\_consumer(\textbf{ProxyPullSupplier}, \textbf{PullConsumer}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 62] Connect a consumer to the proxy}
- pull(\textbf{ProxyPullSupplier}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 62] Pull an Any event from the proxy}
- try\_pull(\textbf{ProxyPullSupplier}) \rightarrow \textbf{Reply} \hspace{1cm} \textit{[page 62] Try and pull an Any event from the proxy}
- disconnect\_pull\_supplier(\textbf{ProxyPullSupplier}) \rightarrow \textbf{ok} \hspace{1cm} \textit{[page 63] Close the connection and terminate the proxy}
CosNotifyChannelAdmin_ProxyPushConsumer

The following functions are exported:

- `connect_any_push_supplier(ProxyPushConsumer, PushSupplier) -> Reply`  
  [page 64] Connect a supplier to the proxy
- `push(ProxyPushConsumer, Event) -> Reply`  
  [page 64] Push an Any event to the proxy
- `disconnect_push_consumer(ProxyPushConsumer) -> ok`  
  [page 64] Close the connection and terminate the proxy

CosNotifyChannelAdmin_ProxyPushSupplier

The following functions are exported:

- `connect_any_push_consumer(ProxyPushSupplier, PushConsumer) -> Reply`  
  [page 65] Connect a consumer to the proxy
- `suspend_connection(ProxyPushSupplier) -> Reply`  
  [page 65] Suspend the connection between the proxy and the client
- `resume_connection(ProxyPushSupplier) -> Reply`  
  [page 65] Resume a previously suspended connection with the proxy
- `disconnect_push_supplier(ProxyPushSupplier) -> ok`  
  [page 66] Close the connection and terminate the proxy

CosNotifyChannelAdmin_ProxySupplier

The following functions are exported:

- `_get_MyType(ProxySupplier) -> ProxyType`  
  [page 67] Return the proxy type
- `_get_MyAdmin(ProxySupplier) -> AdminObject`  
  [page 67] Return the target object's associated AdminObject
- `_get_priority_filter(ProxySupplier) -> MappingFilter`  
  [page 67] Return the target object's associated priority MappingFilter
- `_set_priority_filter(ProxySupplier, MappingFilter) -> ok`  
  [page 67] Set the target object's associated priority MappingFilter
- `_get_lifetime_filter(ProxySupplier) -> MappingFilter`  
  [page 68] Return the target object's associated lifetime MappingFilter
- `_set_lifetime_filter(ProxySupplier, MappingFilter) -> ok`  
  [page 68] Set the target object's associated lifetime MappingFilter
- `obtain_offered_types(ProxySupplier, ObtainInfoMode) -> EventTypeSeq`  
  [page 68] Administer the type of events the proxy supplies
- `validate_event_qos(ProxySupplier, QoSProperties) -> Reply`  
  [page 68] Check if the QoS properties can be set
CosNotifyChannelAdmin.SequenceProxyPullConsumer

The following functions are exported:

- `connect_sequence_pull_supplier(SequenceProxyPullConsumer, PullSupplier) -> Reply`
  [page 70] Connect a supplier to the proxy

- `suspend_connection(SequenceProxyPullConsumer) -> Reply`
  [page 70] Suspend the connection with the proxy

- `resume_connection(SequenceProxyPullConsumer) -> Reply`
  [page 70] Resume a previously suspended connection with the proxy

- `disconnect_sequence_pull_consumer(SequenceProxyPullConsumer) -> ok`
  [page 71] Close connection and terminate the proxy

CosNotifyChannelAdmin.SequenceProxyPullSupplier

The following functions are exported:

- `connect_sequence_pull_consumer(SequenceProxyPullSupplier, PullConsumer) -> Reply`
  [page 72] Connect a consumer to the proxy

- `pull_structured_events(SequenceProxyPullSupplier, MaxEvents) -> Reply`
  [page 72] Pull structured events from the proxy

- `try_pull_structured_events(SequenceProxyPullSupplier, MaxEvents) -> Reply`
  [page 73] Try to pull structured events from the proxy

- `disconnect_sequence_pull_supplier(SequenceProxyPullSupplier) -> ok`
  [page 73] Close the connection and terminate the proxy

CosNotifyChannelAdmin.SupplierAdmin

The following functions are exported:

- `_get_MyID(SupplierAdmin) -> AdminID`
  [page 74] Return the object's Id

- `_get_MyChannel(SupplierAdmin) -> Channel`
  [page 74] Return the object's associated channel

- `_get_MyOperator(SupplierAdmin) -> OpType`
  [page 74] Return the filter scheme

- `_get_pull_consumers(SupplierAdmin) -> ProxyIDSeq`
  [page 74] Return all associated pull consumers Id:s

- `_get_push_consumers(SupplierAdmin) -> ProxyIDSeq`
  [page 75] Return all associated push consumers Id:s

- `get_proxy_consumer(SupplierAdmin, ProxyID) -> Reply`
  [page 75] Return the Proxy which corresponds to the given Id

- `obtain_notification_pull_consumer(SupplierAdmin, SupplierType) -> Reply`
  [page 75] Create a new proxy
CosNotifyComm_NOTIFYPUBLISH

The following functions are exported:

- `offer_change(Object, Added, Removed) -> Reply`
  [page 77] Inform the target object which type of events the supplier will deliver

CosNotifyComm_NOTIFYSUBSCRIBE

The following functions are exported:

- `subscription_change(Object, Added, Removed) -> Reply`
  [page 78] Inform the target object which event types the client will and will not accept in the future

CosNotifyFilter_FILTER

The following functions are exported:

- `_get_constraint_grammar(Filter) -> Grammar`
  [page 79] Return which type of Grammar the Filter uses

- `add_constraints(Filter, ConstraintExpSeq) -> Reply`
  [page 79] Add new constraints to the filter

- `modify_constraints(Filter, ConstraintIDSeq, ConstraintInfoSeq) -> Reply`
  [page 79] Modify existing constraints

- `get_constraints(Filter, ConstraintIDSeq) -> Reply`
  [page 80] Return all constraints which match the supplied Ids

- `get_all_constraints(Filter) -> ConstraintInfoSeq`
  [page 80] Return all constraints associated with the target object

- `remove_all_constraints(Filter) -> ok`
  [page 80] Remove all constraints associated with the target object

- `destroy(Filter) -> ok`
  [page 81] Terminate the target object

- `match(Filter, Event) -> Reply`
  [page 81] Match the Any event if it satisfies at least one constraint

- `match_structured(Filter, Event) -> Reply`
  [page 81] Match the structured event if it satisfies at least one constraint
- `attach_callback(Filter, NotifySubscribe) -> CallbackID`
  [page 81] Connect NotifySubscribe object, which should be informed when the
target object's constraints are updated
- `detach_callback(Filter, CallbackID) -> Reply`
  [page 81] Disconnect the NotifySubscribe object with the given Id
- `get_callbacks(Filter) -> CallbackIDSeq`
  [page 82] Return all NotifySubscribe Id's associated with the target object

**CosNotifyFilter_FilterAdmin**

The following functions are exported:

- `add_filter(Object, Filter) -> FilterID`
  [page 83] Add a new filter to the target object
- `remove_filter(Object, FilterID) -> ok`
  [page 83] Remove a filter associated with the target object
- `get_filter(Object, FilterID) -> Reply`
  [page 83] Return the filter with the given Id
- `get_all_filters(Object) -> FilterIDSeq`
  [page 83] Return a list of all filter Id:s associated with the target object
- `remove_all_filters(Object) -> ok`
  [page 84] Remove all filters from the target object

**CosNotifyFilter_FilterFactory**

The following functions are exported:

- `create_filter(FilterFactory, Grammar) -> Reply`
  [page 85] Create a Filterobject
- `create_mapping_filter(FilterFactory, Grammar) -> Reply`
  [page 85] Create a MappingFilterobject

**CosNotifyFilter_MappingFilter**

The following functions are exported:

- `_get_constraint_grammar(MappingFilter) -> Grammar`
  [page 86] Return which type of Grammar the MappingFilter uses
- `_get_value_type(MappingFilter) -> CORBA::TypeCode`
  [page 86] Return the CORBA::TypeCode of the default value associated with the
  target object
- `_get_default_value(MappingFilter) -> #any`
  [page 86] Return the #any() default value associated with the target object
- `add_mapping_constraints(MappingFilter, MappingConstraintPairSeq) -> Reply`
  [page 86] Add new mapping constraints
- `modify_constraints(MappingFilter, ConstraintIDSeq, MappingConstraintInfoSeq) -> Reply`
  [page 87] Modify the constraints associated with the target object
get_mapping_constraints(MappingFilter, ConstraintIDSeq) -> Reply
[page 88] Return the target object’s associated constraints with given ID:s

get_all_mapping_constraints(MappingFilter) ->
MappingConstraintInfoSeq
[page 88] Return the target object’s all associated constraints

remove_all_mapping_constraints(MappingFilter) -> ok
[page 88] Remove all constraints associated with the target object

destroy(MappingFilter) -> ok
[page 89] Terminate the target object

match(MappingFilter, Event) -> Reply
[page 89] Evaluate the given Any event with the Filter’s constraints

match_structured(MappingFilter, Event) -> Reply
[page 89] Evaluate the given structured event with the Filter’s constraints

cosNotification Application

The following functions are exported:

install() -> Return
[page 90] Install the cosNotification application

install(Seconds) -> Return
[page 90] Install the cosNotification application

install_event() -> Return
[page 90] Install the necessary cosEvent interfaces

install_event(Seconds) -> Return
[page 90] Install the necessary cosEvent interfaces

uninstall() -> Return
[page 90] Uninstall the cosNotification application

uninstall(Seconds) -> Return
[page 91] Uninstall the cosNotification application

uninstall_event() -> Return
[page 91] Uninstall the inherited cosEvent interfaces

uninstall_event(Seconds) -> Return
[page 91] Uninstall the inherited cosEvent interfaces

start() -> Return
[page 91] Start the cosNotification application

stop() -> Return
[page 91] Stop the cosNotification application

start_global_factory() -> ChannelFactory
[page 91] Start a global channel factory as default

start_global_factory(Options) -> ChannelFactory
[page 91] Start a global channel factory with options

start_factory() -> ChannelFactory
[page 92] Start a channel factory as default

start_factory(Options) -> ChannelFactory
[page 92] Start a channel factory with options
stop_factory(ChannelFactory) -> Reply
[page 92] Terminate the target object

start_filter_factory() -> FilterFactory
[page 93] Start a filter factory

stop_filter_factory(FilterFactory) -> Reply
[page 93] Terminate the target object

create_structured_event(Domain, Type, Event, VariableHeader, FilterableBody, BodyRemainder) -> Reply
[page 93] Create a structured event

type_check() -> Reply
[page 93] Return the value of the configuration parameter type_check
CosNotification

Erlang Module

To get access to all definitions include necessary hrl files by using:
-include_lib("cosNotification/include/*.hrl").

Exports

'EventReliability'() -> string()
   This function returns the EventReliability QoS identifier

'BestEffort'() -> short()
   This function returns the BestEffort QoS value.

'Persistent'() -> short()
   This function returns the Persistent QoS value.

'ConnectionReliability'() -> string()
   This function returns the ConnectionReliability QoS identifier.

'Priority'() -> string()
   This function returns the Priority QoS identifier.

'LowestPriority'() -> short()
   This function returns the LowestPriority QoS value.

'HighestPriority'() -> short()
   This function returns the HighestPriority QoS value.

'DefaultPriority'() -> short()
   This function returns the DefaultPriority QoS value.

'StartTime'() -> string()
   This function returns the StartTime QoS identifier.

'SтопTime'() -> string()
This function returns the StopTime QoS identifier.

'Timeout'() -> string()
This function returns the Timeout QoS identifier.

'OrderPolicy'() -> string()
This function returns the OrderPolicy QoS identifier.

'AnyOrder'() -> short()
This function returns the AnyOrder QoS value.

'FifoOrder'() -> short()
This function returns the FifoOrder QoS value.

'PriorityOrder'() -> short()
This function returns the PriorityOrder QoS value.

'DeadlineOrder'() -> short()
This function returns the DeadlineOrder QoS value.

'DiscardPolicy'() -> string()
This function returns the DiscardPolicy QoS identifier.

'LifoOrder'() -> short()
This function returns the LifoOrder QoS value.

'RejectNewEvents'() -> short()
This function returns the RejectNewEvents QoS value.

'MaximumBatchSize'() -> string()
This function returns the MaximumBatchSize QoS identifier.

'PacingInterval'() -> string()
This function returns the PacingInterval QoS identifier.

'StartTimeSupported'() -> string()
This function returns the StartTimeSupported QoS identifier.

'StopTimeSupported'() -> string()
This function returns the StopTimeSupported QoS identifier.

'MaxEventsPerConsumer'() -> string()
This function returns the MaxEventsPerConsumer QoS identifier.

'MaxQueueLength'() -> string()
This function returns the MaxQueueLength Admin identifier.

'MaxConsumers'() -> string()
This function returns the MaxConsumers Admin identifier.

'MaxSuppliers'() -> string()
This function returns the MaxSuppliers Admin identifier.
CosNotification_AdminPropertiesAdmin

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").
All objects, which inherit this interface, export functions described in this module.

Exports

\[ get\_admin(Object) \rightarrow AdminProperties \]

Types:
- Object = #objref
- AdminProperties = [AdminProperty]
- AdminProperty = #CosNotification\_Property\{name, value\}
  - name = string()
  - value = #any
This operation returns sequence of name-value pairs which encapsulates the current administrative properties of the target object.

\[ set\_admin(Object, AdminProperties) \rightarrow Reply \]

Types:
- Object = #objref
- AdminProperties = [AdminProperty]
- AdminProperty = #CosNotification\_Property\{name, value\}
  - name = string()
  - value = #any
- Reply = ok | \{'EXCEPTION', CosNotification\_UnsupportedAdmin\}
As input, this operation accepts a sequence of name-value pairs encapsulating the desired administrative settings for the target object. If it is not possible to set the given properties the exception \UnsupportedAdmin\ will be raised.
CosNotification_QoSAadmin

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").
All objects, which inherit this interface, export functions described in this module.

Exports

get_qos(Object) -> Reply
Types:
- Object = #objref
- Reply = [QoSProperty]
- QoSProperty = #'CosNotification.Property'(name, value)
- name = string()
- value = #any
This operation returns a list of name-value pairs which encapsulates the current QoS settings for the target object.

set_qos(Object, QoS) -> Reply
Types:
- Object = #objref
- QoS = [QoSProperty]
- QoSProperty = #'CosNotification.Property'(name, value)
- name = string()
- value = #any
- Reply = ok | {'EXCEPTION', 'CosNotification.UnsupportedQoS'}(qos_err)
- qos_err = PropertyInfoSeq
- PropertyInfoSeq = [PropertyError]
- PropertyInfoError = #'CosNotification.PropertyError'(code, name, available_range)
- code = 'UNSUPPORTED_PROPERTY' | 'UNAVAILABLE_PROPERTY' | 'UNSUPPORTED_VALUE' | 'UNAVAILABLE_VALUE' | 'BAD_PROPERTY' | 'BAD_TYPE' | 'BAD_VALUE'
- name = string()
- available_range = PropertyRange
- PropertyRange = #'CosNotification.PropertyRange'(low_val, high_val)
- low_val = high_val = #any
To alter the current QoS settings for the target object this function must be used. If it is not possible to set the requested QoS the UnsupportedQoS exception is raised, which includes a sequence of PropertyError’s describing which QoS, possible range and why is not allowed.

```plaintext
validate_qos(Object, QoS) -> Reply

Types:
- Object = #objref
- QoS = [QoSProperty]
- QoSProperty = #Property{name, value}
- name = string()
- value = #any

Reply = {ok, NamedPropertyRangeSeq} | {'EXCEPTION', CosNotification_UnsupportedQoS()}
- NamedPropertyRangeSeq = [NamedPropertyRange]
- NamedPropertyRange = #CosNotification_NamedPropertyRange{name, range}
- name = string()
- range = #CosNotification_PropertyRange{low_val, high_val}
- low_val = #any
- high_val = #any
```

The purpose of this operations is to check if a QoS setting is supported by the target object and if so, the operation returns additional properties which could be optionally added as well.
CosNotifyChannelAdmin.SequenceProxyPushConsumer

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotifyComm.NotifyPublish [page 77]
- CosNotification/QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin.ProxyConsumer [page 58]

Exports

connect_sequence_push_supplier(SequenceProxyPushConsumer, PushSupplier) -> Reply
Types:
- SequenceProxyPushConsumer = #objref
- PushSupplier = #objref
- Reply = ok | {'EXCEPTION', 'CosEventChannelAdmin_AlreadyConnected'}

This operation connects a PushSupplier to the target object. If a connection already exists the AlreadyConnected exception is raised.

push_structured_events(SequenceProxyPushConsumer, EventBatch) -> Reply
Types:
- SequenceProxyPushConsumer = #objref
- EventBatch = [StructuredEvent]
- StructuredEvent = #{'CosNotification_StructuredEvent'\{header, filterable_data, remainder_of_body\}
- header = EventHeader
- filterable_data = [\{'CosNotification_Property'\{name, value\}\]
- name = string()
- value = #any
- remainder_of_body = #any
- EventHeader = #{'CosNotification_EventHeader'\{fixed_header, variable_header\}
- fixed_header = FixedEventHeader
- variable_header = OptionalHeaderFields
- FixedEventHeader = #{'CosNotification_FixedEventHeader'\{event_type, event_name\}
- event_type = EventType
A client must use this operation when it wishes to push a new sequence of events to the target object. If no connection exists the Disconnected exception is raised.

```
disconnect_sequence_push_consumer(SequenceProxyPushConsumer) -> ok

Types:
- SequenceProxyPushConsumer = #objref

This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_SequenceProxy

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:

- CosNotifyComm.NotifySubscribe [page 78]
- CosNotification.QoSAdmin [page 37]
- CosNotifyFilter.FilterAdmin [page 83]
- CosNotifyChannelAdmin.ProxySupplier [page 67]

Exports

connect_sequence_push_consumer(SequenceProxyPushSupplier, PushConsumer) -> Reply

Types:
- SequenceProxyPushSupplier = #objcref
- PushConsumer = #objcref
- Reply = ok | {'EXCEPTION', 'CosEventChannelAdmin_AlreadyConnected'} |
  {'EXCEPTION', 'CosEventChannelAdmin_TypeError'}

This operation connects a PushConsumer to the target object. If a connection already
exists or the function push_structured_events is not supported the exceptions
AlreadyConnected or TypeError will be raised respectively.

suspend_connection(SequenceProxyPushSupplier) -> Reply

Types:
- SequenceProxyPushSupplier = #objcref
- Reply = ok | {'EXCEPTION',
  #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} |
  {'EXCEPTION', #CosNotifyChannelAdmin_NotConnected'}

This operation suspends the connection between the client and the target object. If no
connection exists or the connection is already suspended an exception is raised.

resume_connection(SequenceProxyPushSupplier) -> Reply

Types:
- SequenceProxyPullConsumer = #objcref
- Reply = ok | {'EXCEPTION',
  #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} | {'EXCEPTION',
  #CosNotifyChannelAdmin_NotConnected'}

If the connection have previously been suspended this operation must used if we want to resume the connection. If no object have been connected or the connection already is active an exception is raised.

disconnect_sequence_push_supplier(SequenceProxyPushSupplier) => ok

Types:
- SequenceProxyPushSupplier = #objref

This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_StructuredProxyPullConsumer

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:

- CosNotifyComm_NotifyPublish [page 77]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxyConsumer [page 58]

Exports

connect_structured_pull_supplier(StructuredProxyPullConsumer, PullSupplier) -> Reply

Types:
- StructuredProxyPullConsumer = #objref
- PullSupplier = #objref
- Reply = ok | {'EXCEPTION', '#CosEventChannelAdmin_AlreadyConnected'} | {'EXCEPTION', '#CosEventChannelAdmin_TypeError'}

This operation connects a PullSupplier to the target object. If a connection already exists or the given client object does not support the functions pull_structured_event and try_pull_structured_event an exception is raised.

suspend_connection(StructuredProxyPullConsumer) -> Reply

Types:
- StructuredProxyPullConsumer = #objref
- Reply = ok | {'EXCEPTION', #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} | {'EXCEPTION', #CosNotifyChannelAdmin_NotConnected'}

This operation suspends the connection between the target object and its client. If no connection exists or already suspended an exception is raised.

resume_connection(StructuredProxyPullConsumer) -> Reply

Types:
- StructuredProxyPullConsumer = #objref
If the connection have been suspended this operation must be used if we want to resume the connection. If the connection already are active or no connection have been created an exception is raised.

`disconnect_structured_pull_consumer(StructuredProxyPullConsumer) => ok`

Types:

- `StructuredProxyPullConsumer = #objref`

This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_StructuredProxyPullSupplier

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotifyComm.NotifySubscribe [page 78]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxySupplier [page 67]

Exports

connect_structured_pull_consumer(StructuredProxyPullSupplier, PullConsumer) -> Reply

Types:
- StructuredProxyPullSupplier = #objref
- PullConsumer = #objref
- Reply = ok | {EXCEPTION, #CosEventChannelAdmin_AlreadyConnected}

This operation connects a PullConsumer to the target object. If a connection already exists the AlreadyConnected exception is raised.

pull_structured_event(StructuredProxyPullSupplier) -> Reply

Types:
- StructuredProxyPullSupplier = #objref
- Reply = StructuredEvent | {EXCEPTION, #CosEventChannelAdmin_Disconnected}
- StructuredEvent = #CosNotification_StructuredEvent {header, filterable_data, remainder_of_body}
- header = EventHeader
- filterable_data = [ #CosNotification_Property {name, value} ]
- name = string()
- value = #any
- remainder_of_body = #any
- EventHeader = #CosNotification_EventHeader {fixed_header, variable_header}
- fixed_header = FixedEventHeader
- variable_header = OptionalHeaderFields
- FixedEventHeader = #CosNotification_FixedEventHeader {event_type, event_name}
This operation pulls next event from the target object; if an event cannot be delivered this function blocks until an event arrives.

```clojure
try_pull_structured_event(StructuredProxyPullSupplier) -> Reply
```

Types:
- `StructuredProxyPullSupplier = #objref`
- `Reply = {StructuredEvent, HasEvent} | {'EXCEPTION', '#CosEventChannelAdmin_Disconnected'}
- `HasEvent = boolean()
- `StructuredEvent = #CosNotification_StructuredEvent{header, filterable_data, remainder_of_body}
- `header = EventHeader
- `filterable_data = [{#CosNotification_Property{name, value}}]
- `name = string()
- `value = #any
- `remainder_of_body = #any
- `EventHeader = #CosNotification_EventHeader{fixed_header, variable_header}
- `fixed_header = FixedEventHeader
- `variable_header = OptionalHeaderFields
- `FixedEventHeader = #CosNotification_FixedEventHeader{event_type, event_name}
- `event_type = EventType
- `event_name = string()
- `EventType = #CosNotification_EventType{domain_name, type_name}
- `domain_name = type_name = string()
- `OptionalHeaderFields = [{#CosNotification_Property{name, value}]

This operation try to pull next event from the target object. If no event have arrived an empty event is returned and the out parameter HasEvent is set to false. Otherwise, the boolean flag is set to true and an valid event is returned.

```clojure
disconnect_structured_pull_supplier(StructuredProxyPullSupplier) -> ok
```

Types:
- `StructuredProxyPullSupplier = #objref`

This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_StructuredProxyPushConsumer

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:

- CosNotifyComm_NotifyPublish [page 77]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxyConsumer [page 58]

Exports

connect_structured_push_supplier(StructuredProxyPushConsumer, PushSupplier) -> Reply

Types:
- StructuredProxyPushConsumer = #objref
- PushSupplier = #objref
- Reply = ok | {'EXCEPTION', '#CosEventChannelAdmin_AlreadyConnected'}

This operation connects a PushSupplier to the target object. If a connection already exists an exception is raised.

push_structured_event(StructuredProxyPushConsumer, StructuredEvent) -> Reply

Types:
- StructuredProxyPushConsumer = #objref
- StructuredEvent = #CosNotification_StructuredEvent{header, filterable_data, remainder_of_body}
- header = EventHeader
- filterable_data = [#CosNotification_Property{name, value}]
- name = string()
- value = #any
- remainder_of_body = #any
- EventHeader = #CosNotification_EventHeader{fixed_header, variable_header}
- fixed_header = FixedEventHeader
- variable_header = OptionalHeaderFields
- FixedEventHeader = #CosNotification_FixedEventHeader{event_type, event_name}
- event_type = EventType
- event_name = string()
When a client wants to push a new event to the target object, this operation must be used.

disconnect_structured_push_consumer(StructuredProxyPushConsumer) -> ok

Types:
- StructuredProxyPushConsumer = #objref

This operation causes the target object to close the connection and terminate.
CosNotifyChannelAdmin_StructuredProxyPushSupplier

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotifyComm.NotifySubscribe [page 78]
- CosNotification.QoSAdmin [page 37]
- CosNotifyFilter.FilterAdmin [page 83]
- CosNotifyChannelAdmin.ProxySupplier [page 67]

Exports

connect_structured_push_consumer(StructuredProxyPushSupplier, PushConsumer) -> Reply

Types:
- StructuredProxyPushSupplier = #objref
- PushConsumer = #objref
- Reply = ok | {'EXCEPTION', 'CosEventChannelAdmin.AlreadyConnected'} | {'EXCEPTION', 'CosEventChannelAdmin.TypeError'}

This operation connects a PushConsumer to the target object. If a connection already exists or the function push_structured_event is not supported by the client object an exception is raised.

suspend_connection(StructuredProxyPushSupplier) -> Reply

Types:
- StructuredProxyPushSupplier = #objref
- Reply = ok | {'EXCEPTION', #CosNotifyChannelAdmin.ConnectionAlreadyInactive} | {'EXCEPTION', #CosNotifyChannelAdmin.NotConnected}

This operation suspends the connection with the target object. If no connection exists or the connection already is suspended an exception is raised.

resume_connection(StructuredProxyPushSupplier) -> Reply

Types:
- StructuredProxyPullConsumer = #objref
- Reply = ok | {'EXCEPTION', 
  #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} | {'EXCEPTION', 
  #CosNotifyChannelAdmin_NotConnected'}

If the connection with the target object have been suspended this function must be 
used to resume the connection. If no client have been connected or the connection is 
active an exception is raised.

disconnect_structured_push_supplier(StructuredProxyPushSupplier) -> ok

Types:
- StructuredProxyPushSupplier = #objref

This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_ConsumerAdmin

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotification_qosAdmin [page 37]
- CosNotifyComm.NotifySubscribe [page 78]
- CosNotifyFilter_FilterAdmin [page 83]

Exports

-get_MyID(ConsumerAdmin) -> AdminID
  Types:
  - ConsumerAdmin = #objref
  - AdminID = long()
  The ID returned by the creating channel is equal to the value encapsulated by this
  readonly attribute.

-get_MyChannel(ConsumerAdmin) -> Channel
  Types:
  - ConsumerAdmin = #objref
  - Channel = #objref
  The creating channel's reference is maintained by this readonly attribute.

-get_MyOperator(ConsumerAdmin) -> OpType
  Types:
  - ConsumerAdmin = #objref
  - OpType = 'AND_OP' | 'OR_OP'
  When ConsumerAdmin's are created an operation type, i.e., 'AND_OP' or 'OR_OP', is
  supplied, which determines the semantics used by the target object concerning
  evaluation against any associated Filter objects.

-get_priority_filter(ConsumerAdmin) -> MappingFilter
  Types:
  - ConsumerAdmin = MappingFilter = #objref
If set, this operation returns the associated priority MappingFilter, otherwise a NIL object reference is returned.

_set_priority_filter(ConsumerAdmin, MappingFilter) -> ok

Types:
- ConsumerAdmin = MappingFilter = #objref
To associate a priority MappingFilter with the target object this operation must be used.

_get_lifetime_filter(ConsumerAdmin) -> MappingFilter

Types:
- ConsumerAdmin = MappingFilter = #objref
Unless a lifetime MappingFilter have been associated with the target object a NIL object reference is returned by this operation.

_set_lifetime_filter(ConsumerAdmin, MappingFilter) -> ok

Types:
- ConsumerAdmin = MappingFilter = #objref
This operation associate a lifetime MappingFilter with the target object.

_get_pull_suppliers(ConsumerAdmin) -> ProxyIDSeq

Types:
- ConsumerAdmin = #objref
- ProxyIDSeq = [ProxyID]
- ProxyID = long()
This readonly attribute maintains the Id’s for all PullProxies created by the target object and still alive.

_get_push_suppliers(ConsumerAdmin) -> ProxyIDSeq

Types:
- ConsumerAdmin = #objref
- ProxyIDSeq = [ProxyID]
- ProxyID = long()
This attribute is similar to the _get_pull_suppliers attribute but maintains the Id’s for all PushProxies created by the target object and still alive.

get_proxy_supplier(ConsumerAdmin, ProxyID) -> Reply

Types:
- ConsumerAdmin = #objref
- ProxyID = long()
- Reply = Proxy | {'EXCEPTION', 'CosNotifyChannelAdminProxyNotFound'{},}
- Proxy = #objref
If a proxy with the given Id exists the reference to the object is returned, but if the object have terminated, or an incorrect Id is supplied, an exception is raised.

**obtain-notification-pull-supplier(ConsumerAdmin, ConsumerType) -> Reply**

Types:
- `ConsumerAdmin = #objref`
- `ConsumerType = 'ANY_EVENT' | 'STRUCTURED_EVENT' | 'SEQUENCE_EVENT'`
- `Reply = {Proxy, ProxyID}`
- `Proxy = #objref`
- `ProxyID = long()`

Determined by the parameter `ConsumerType`, a proxy which will accept events of the defined type is created. Along with the object reference an Id is returned.

**obtain-pull-supplier(ConsumerAdmin) -> Proxy**

Types:
- `ConsumerAdmin = #objref`
- `Proxy = #objref`

This operation creates a new proxy which accepts any events.

**obtain-notification-push-supplier(ConsumerAdmin, ConsumerType) -> Reply**

Types:
- `ConsumerAdmin = #objref`
- `ConsumerType = 'ANY_EVENT' | 'STRUCTURED_EVENT' | 'SEQUENCE_EVENT'`
- `Reply = {Proxy, ProxyID}`
- `Proxy = #objref`
- `ProxyID = long()`

A proxy which accepts events of the type described by the parameter `ConsumerType` is created by this operation. A unique Id is returned as an out parameter.

**obtain-push-supplier(ConsumerAdmin) -> Proxy**

Types:
- `ConsumerAdmin = #objref`
- `Proxy = #objref`

The object created by this function is a proxy which accepts any events.

**destroy(ConsumerAdmin) -> ok**

Types:
- `ConsumerAdmin = #objref`

To terminate the target object this operation should be used. The associated Channel will be notified.
CosNotifyChannelAdmin_EventChannel

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotification_QoSAdmin [page 37]
- CosNotification_AdminPropertiesAdmin [page 36]

Exports

_get_MyFactory(Channel) -> ChannelFactory

Types:
- Channel = #objref
- ChannelFactory = #objref

This readonly attribute maintains the reference of the event channel factory that created the target channel.

_get_default_consumer_admin(Channel) -> ConsumerAdmin

Types:
- Channel = #objref
- ConsumerAdmin = #objref

This is a readonly attribute which maintains a reference to a default ConsumerAdmin object associated with the target object.

_get_default_supplier_admin(Channel) -> SupplierAdmin

Types:
- Channel = #objref
- SupplierAdmin = #objref

This is a readonly attribute which maintains a reference to a default SupplierAdmin object associated with the target object.

_get_default_filter_factory(Channel) -> FilterFactory

Types:
- Channel = #objref
- FilterFactory = #objref
The default FilterFactory associated with the target channel is maintained by this readonly attribute.

new_for_consumers(Channel, OpType) \rightarrow Return

Types:
- Channel = #objref
- OpType = 'AND.OP' | 'OR.OP'
- Return = {ConsumerAdmin, AdminID}
- ConsumerAdmin = #objref
- AdminID = long()

This operation creates a new instance of a ConsumerAdmin and supplies an Id which may be used when invoking other operations exported by this module. The returned object will inherit the Quality of Service properties of the target channel.

for_consumers(Channel) \rightarrow ConsumerAdmin

Types:
- Channel = #objref
- ConsumerAdmin = #objref

A new new instance of a ConsumerAdmin object is created but no Id is returned. The returned object’s operation type, i.e., 'AND.OP' or 'OR.OP', will be set to the value of the configuration parameter filterOp. The target object’s Quality of Service properties will be inherited by the returned ConsumerAdmin.

new_for_suppliers(Channel, OpType) \rightarrow Return

Types:
- Channel = #objref
- OpType = 'AND.OP' | 'OR.OP'
- Return = {SupplierAdmin, AdminID}
- SupplierAdmin = #objref
- AdminID = long()

Enables us to create a new instance of a SupplierAdmin. An Id, which may be used when invoking other operations exported by this module, is also returned. The current Quality of Service settings associated with the target object will be inherited by the SupplierAdmin.

for_suppliers(Channel) \rightarrow SupplierAdmin

Types:
- Channel = #objref
- SupplierAdmin = #objref

To create a new SupplierAdmin with the target object’s current Quality of Service settings we can use this function. The returned object’s operation type ('AND.OP' or 'OR.OP') will be determined by the configuration variable filterOp.

get_consumeradmin(Channel, AdminID) \rightarrow ConsumerAdmin

Types:
- Channel = #objref
- AdminID = long()
- ConsumerAdmin = #objref | {'EXCEPTION',
  #CosNotifyChannelAdmin_AdminNotFound'}

If the given Id is associated with a ConsumerAdmin the object reference is returned. If such association never existed or the ConsumerAdmin have terminated an exception is raised.

get_supplieradmin(Channel, AdminID) -> SupplierAdmin

Types:
- Channel = #objref
- AdminID = long()
- SupplierAdmin = #objref | {'EXCEPTION',
  #CosNotifyChannelAdmin_AdminNotFound'}

Equal to the operation get_consumeradmin/2 but a reference to a SupplierAdmin is returned.

get_all_consumeradmins(Channel) -> Reply

Types:
- Channel = #objref
- Reply = [AdminID]
- AdminID = long()

To get access to all ConsumerAdmin Id’s created by the target object, and still alive, this operation could be invoked.

get_all_supplieradmins(Channel) -> Reply

Types:
- Channel = #objref
- Reply = [AdminID]
- AdminID = long()

Equal to the operation get_all_consumeradmins/1 but returns a list of all SupplierAdmin object ID’s.

destroy(Channel) -> ok

Types:
- Channel = #objref

The destroy operation will terminate the target channel and all associated Admin objects.
To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

Exports

create_channel(ChannelFactory, InitialQoS, InitialAdmin) -> Return

Types:
- ChannelFactory = #objref
- InitialQoS = CosNotification::QoSProperties
- InitialAdmin = CosNotification::AdminProperties
- Return = {EventChannel, ChannelID}
- EventChannel = #objref
- ChannelID = long()

This operation creates a new event channel. Along with the channel reference an id is returned which can be used when invoking other operations exported by this module. The Quality of Service argument supplied will be inherited by objects created by the channel. For more information about QoS settings see the User’s Guide.

If no QoS- and/or Admin-properties are supplied (i.e. empty list), the default settings will be used. For more information, see the User’s Guide.

get_all_channels(ChannelFactory) -> ChannelIDSeq

Types:
- ChannelFactory = #objref
- ChannelIDSeq = [long()]

This operation returns a id sequence of all channel’s created by this ChannelFactory.

get_event_channel(ChannelFactory, ChannelID) -> Return

Types:
- ChannelFactory = #objref
- ChannelID = long()
- Return = EventChannel | {'EXCEPTION', 
  #CosNotifyChannelAdmin_ChannelNotFound'}
- EventChannel = #objref

This operation returns the EventChannel associated with the given id. If no channel is associated with the id, i.e., never existed or have been terminated, an exception is raised.
CosNotifyChannelAdmin_ProxyConsumer

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:

- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]

Exports

_get_MyType(ProxyConsumer) -> ProxyType

Types:
- ProxyConsumer = #objref
- ProxyType = 'PUSH ANY' | 'PULL ANY' | 'PUSH_STRUCTURED' | 'PULL_STRUCTURED' | 'PUSH SEQUENCE' | 'PULL SEQUENCE'

This readonly attribute maintains the enumerant describing the which type the target object is.

_get_MyAdmin(ProxyConsumer) -> AdminObject

Types:
- ProxyConsumer = AdminObject = #objref
- AdminObject = AdminObject = #objref

This readonly attribute maintains the admin's reference which created the target object.

obtain_subscription_types(ProxyConsumer, ObtainInfoMode) -> EventTypeSeq

Types:
- ProxyConsumer = #objref
- ObtainInfoMode = 'ALL NOW UPDATES OFF' | 'ALL NOW UPDATES ON' | 'NONE NOW UPDATES OFF' | 'NONE NOW UPDATES ON'
- EventTypeSeq = [EventType]
- EventType = #'CosNotificationEventType'(domain_name, type_name)
- domain_name = type_name = string()
Depending on the input parameter ObtainInfoMode, this operation may return a sequence of the EventTypes the target object is interested in receiving. If 'ALL_NOW_UPDATES_OFF' or 'ALL_NOW_UPDATES_ON' is given a sequence will be returned, otherwise not. If 'ALL_NOW_UPDATES_OFF' or 'NONE_NOW_UPDATES_OFF' are issued the target object will not inform the associated NotifySubscribe object when an update occurs. 'ALL_NOW_UPDATES_ON' or 'NONE_NOW_UPDATES_ON' will result in that update information will be sent.

validate_event_qos(ProxyConsumer, QoSProperties) -> Reply

Types:
- ProxyConsumer = #objref
- QoSProperties = [QoSProperty]
- QoSProperty = #CosNotification_Property{name, value}
  - name = string()
  - value = #any
- Reply = {ok, NamedPropertyRangeSeq} | {'EXCEPTION',
  CosNotificationUnsupportedQoS{qos.err}}
  - NamedPropertyRangeSeq = [NamedPropertyRange]
  - NamedPropertyRange = #CosNotification_NamedPropertyRange{name, range}
    - name = string()
    - range = #CosNotification_PropertyRange{low_val, high_val}
    - low_val = #any
    - high_val = #any
- qos.err = PropertyErrorSeq
- PropertyErrorSeq = [PropertyError]
- PropertyError = #CosNotification_PropertyError{code, name, available_range}
  - code = 'UNSUPPORTED_PROPERTY' | 'UNAVAILABLE_PROPERTY' |'
    'UNSUPPORTED_VALUE' | 'UNAVAILABLE_VALUE' | 'BAD_PROPERTY' |'
    'BAD_TYPE' | 'BAD_VALUE' 
  - name = string()
  - available_range = PropertyRange
- PropertyRange = #CosNotification_PropertyRange{low_val, high_val}
  - low_val = high_val = #any

To check if certain Quality of Service properties can be added to events in the current context of the target object this operation should be used. If we cannot support the required settings an exception describing why will be raised.
CosNotifyChannelAdmin_ProxyPullConsumer

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:

- CosNotifyComm_NotifyPublish [page 77]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxyConsumer [page 58]

Exports

connect_any_pull_supplier(ProxyPullConsumer, PullSupplier) -> Reply

Types:
- ProxyPullConsumer = #objref
- PullSupplier = #objref
- Reply = ok | {'EXCEPTION', #CosEventChannelAdmin_AlreadyConnected'} | {'EXCEPTION', #CosEventChannelAdmin_TypeError'}

This operation connects the given PullSupplier to the target object. If a client is already connected the AlreadyConnected exception will be raised. The client must support the operations pull and try_pull, otherwise the TypeError exception is raised.

suspend_connection(ProxyPullConsumer) -> Reply

Types:
- ProxyPullConsumer = #objref
- Reply = ok | {'EXCEPTION', #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} | {'EXCEPTION', #CosNotifyChannelAdmin_NotConnected'}

If we want to temporarily suspend the connection with the target object this operation must be used. If the connection already have been suspended or no client have been connected an exception is raised.

resume_connection(ProxyPullConsumer) -> Reply

Types:
- ProxyPullConsumer = #objref
If the connection have been suspended earlier we can invoke this operation to reinstate the connection. If the connection already is active or no client have been connected to the target object an exception is raised.

\[
\text{disconnect\_pull\_consumer}(\text{ProxyPullConsumer}) \rightarrow \text{ok}
\]

Types:
- \text{ProxyPullConsumer} = \#objref

Invoking this operation disconnects the client from the target object which then terminates and inform its administrative parent.
CosNotifyChannelAdmin_ProxyPullSupplier

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").
This module also exports the functions described in:

- CosNotifyComm_NotifySubscribe [page 78]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxySupplier [page 67]

Exports

connect_any_pull_consumer(ProxyPullSupplier, PullConsumer) -> Reply

Types:
- ProxyPullSupplier = #objref
- PullConsumer = #objref
- Reply = ok | {'EXCEPTION', 'CosEventChannelAdmin_AlreadyConnected'}

This operation connects the given PullConsumer to the target object. If a connection already exists the AlreadyConnected exception is raised.

pull(ProxyPullSupplier) -> Reply

Types:
- ProxyPullSupplier = #objref
- Reply = #any | {'EXCEPTION', 'CosEventChannelAdmin_Disconnected'}

This operation pulls next #any{} event, and blocks, if the target object have no events to forward, until an event can be delivered. If no client have been connected the Disconnected exception is raised.

try_pull(ProxyPullSupplier) -> Reply

Types:
- ProxyPullSupplier = #objref
- Reply = { #any, HasEvent } | {'EXCEPTION', #CosEventChannelAdmin_Disconnected'}
- HasEvent = boolean()
This operation pulls next event, but do not block if the target object have no event to forward. If no client have been connected the Disconnected exception is raised.

`disconnect_pull_supplier(ProxyPullSupplier) -> ok`

Types:
- `ProxyPullSupplier = #objcref`

Invoking this operation will cause the target object to close the connection and terminate.
Erlang Module

To get access to the record definitions for the structures use:
- include_lib("cosNotification/include/*.hrl").
This module also exports the functions described in:
- CosNotifyComm_NotifyPublish [page 77]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_PushConsumer [page 58]

Exports

connectany_push_supplier(ProxyPushConsumer, PushSupplier) -> Reply

Types:
- ProxyPushConsumer = #objref
- PushSupplier = #objref
- Reply = ok | {EXCEPTION, 'CosEventChannelAdmin_AlreadyConnected'}

This operation connects a PushSupplier to the target object. If a connection already exists the AlreadyConnected exception is raised.

push(ProxyPushConsumer, Event) -> Reply

Types:
- ProxyPushConsumer = #objref
- Event = #any
- Reply = ok | {EXCEPTION, 'CosEventChannelAdmin_Disconnected'}

This operation pushes an #any event to the target object. If no client have been connected the Disconnected exception is raised.

disconnect_push_consumer(ProxyPushConsumer) -> ok

Types:
- ProxyPushConsumer = #objref

Invoking this operation will cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_ProxyPushSupplier

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:

- CosNotifyComm_NotifySubscribe [page 78]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxySupplier [page 67]

Exports

connect_any_push_consumer(ProxyPushSupplier, PushConsumer) -> Reply

Types:
- ProxyPushSupplier = #objref
- PushConsumer = #objref
- Reply = ok | {'EXCEPTION', #CosEventChannelAdmin_AlreadyConnected'} |
  {'EXCEPTION', #CosEventChannelAdmin_TypeError'}

This operation connects a PushConsumer to the target object. If a connection already exists or the given client does not support the operation push an exception, AlreadyConnected and TypeError respectively, is raised.

suspend_connection(ProxyPushSupplier) -> Reply

Types:
- ProxyPushSupplier = #objref
- Reply = ok | {'EXCEPTION', #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} |
  {'EXCEPTION', #CosNotifyChannelAdmin_NotConnected'}

This operation suspends the connection with the client object. If the connection already is suspended or no client have been associated an exception is raised.

resume_connection(ProxyPushSupplier) -> Reply

Types:
- ProxyPullConsumer = #objref
• Reply = ok | {'EXCEPTION', 'CosNotifyChannelAdmin_NotConnected'} | {'EXCEPTION', 'CosNotifyChannelAdmin_ConnectionAlreadyInactive'}

If a connection have been suspended earlier, calling this operation will resume the connection. If the connection already is active or no client have been connected an exception is raised.

disconnect_push_supplier(ProxyPushSupplier) -> ok

Types:
• ProxyPushSupplier = #objref
This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin

Erlang Module

To get access to the record definitions for the structures use:

```
-include_lib("cosNotification/include/*.hrl").
```

This module also exports the functions described in:

- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]

Exports

```
-get_MyType(ProxySupplier) -> ProxyType

Types:
  • ProxySupplier = #objref
  • ProxyType = 'PUSH_ANY' | 'PULL_ANY' | 'PUSH_STRUCTURED' | 'PULL_STRUCTURED' | 'PUSH_SEQUENCE' | 'PULL_SEQUENCE'

This readonly attribute maintains the enumerant describing the which type the target object is.

-get_MyAdmin(ProxySupplier) -> AdminObject

Types:
  • ProxySupplier = #objref
  • AdminObject = #objref

This readonly attribute maintains the admin's reference which created the target object.

-get_priority_filter(ProxySupplier) -> MappingFilter

Types:
  • ProxySupplier = #objref
  • MappingFilter = #objref

This operation returns the associated priority MappingFilter. If no such object exist a NIL reference is returned.

-set_priority_filter(ProxySupplier, MappingFilter) -> ok

Types:
  • ProxySupplier = #objref
  • MappingFilter = #objref
This operation associate a new priority MappingFilter with the target object.

```java
_get_lifetime_filter(ProxySupplier) -> MappingFilter
```

Types:
- ProxySupplier = #objref
- MappingFilter = #objref

This operation returns the associated lifetime MappingFilter. If no such object exist a NIL reference is returned.

```java
_set_lifetime_filter(ProxySupplier, MappingFilter) -> ok
```

Types:
- ProxySupplier = #objref
- MappingFilter = #objref

This operation associate a new lifetime MappingFilter with the target object.

```java
obtain_offered_types(ProxySupplier, ObtainInfoMode) -> EventTypeSeq
```

Types:
- ProxySupplier = #objref
- ObtainInfoMode = 'ALL_NOW_UPDATES_OFF' | 'ALL_NOW_UPDATES_ON' | 'NONE_NOW_UPDATES_OFF' | 'NONE_NOW_UPDATES_ON'
- EventTypeSeq = [EventType]
- EventType = #'CosNotification_EventType'(domain_name, type_name)
  - domain_name = type_name = string()

Depending on the input parameter ObtainInfoMode, this operation may return a sequence of the EventType the target object is interested in receiving. If 'ALL_NOW_UPDATES_OFF' or 'ALL_NOW_UPDATES_ON' is given a sequence will be returned, otherwise not. If 'ALL_NOW_UPDATES_OFF' or 'NONE_NOW_UPDATES_OFF' are issued the target object will not inform the associated NotifySubscribe object when an update occurs. 'ALL_NOW_UPDATES_ON' or 'NONE_NOW_UPDATES_ON' will result in that update information will be sent.

```java
validate_event_qos(ProxySupplier, QoSProperties) -> Reply
```

Types:
- ProxySupplier = #objref
- QoSProperties = [QoSProperty]
- QoSProperty = #'CosNotification_Property'(name, value)
  - name = string()
  - value = #any
- Reply = [ok, NamedPropertyRangeSeq] | ['EXCEPTION', CosNotification_UnsupportedQoS(qos_err)]
  - NamedPropertyRangeSeq = [NamedPropertyRange]
  - NamedPropertyRange = #'CosNotification_NamedPropertyRange'(name, range)
    - name = string()
    - range = #'CosNotification_PropertyRange'(low_val, high_val)
    - low_val = #any
To check if certain Quality of Service properties can be added to events in the current context of the target object this operation should be used. If we cannot support the required settings an exception describing why will be raised.
CosNotifyChannelAdmin.SequenceProxyPullConsumer

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotifyComm.NotifyPublish [page 77]
- CosNotification_qosAdmin [page 37]
- CosNotifyFilter.FilterAdmin [page 83]
- CosNotifyChannelAdmin.ProxyConsumer [page 58]

Exports

connect_sequence_pull_supplier(SequenceProxyPullConsumer, PullSupplier) -> Reply

Types:
- SequenceProxyPullConsumer = #objref
- PullSupplier = #objref
- Reply = ok | {'EXCEPTTION', #CosEventChannelAdminAlreadyConnected'} | {'EXCEPTTION', #CosEventChannelAdminTypeError'}

This operation connects a PullSupplier to the target object. If a connection already exists or the supplied client does not support the functions pull_structured_events and try_pull_structured_events an exception is raised.

suspend_connection(SequenceProxyPullConsumer) -> Reply

Types:
- SequenceProxyPullConsumer = #objref
- Reply = ok | {'EXCEPTTION', #CosNotifyChannelAdminConnectionAlreadyInactive'} | {'EXCEPTTION', #CosNotifyChannelAdminNotConnected'}

If a connection exist, invoking this operation will suspend the connection until instructed otherwise. Otherwise, no client have been connected or this operation already have been invoked an exception is raised.

resume_connection(SequenceProxyPullConsumer) -> Reply

Types:
- SequenceProxyPullConsumer = #objref
- Reply = ok | {'EXCEPTION', 
  #CosNotifyChannelAdmin_ConnectionAlreadyInactive'} | {'EXCEPTION', 
  #CosNotifyChannelAdmin_NotConnected'}

If an connection have been suspended this operation must be used to resume the connection. If the connection already is active or no client have been connected an exception is raised.

disconnect_sequence_pull_consumer(SequenceProxyPullConsumer) -> ok

Types:
- SequenceProxyPullConsumer = #objref

This operation close the connection to the client and terminates the target object.
CosNotifyChannelAdmin

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotifyComm_NotifySubscribe [page 78]
- CosNotification_QoSAdmin [page 37]
- CosNotifyFilter_FilterAdmin [page 83]
- CosNotifyChannelAdmin_ProxySupplier [page 67]

Exports

connect_sequence_pull_consumer(SequenceProxyPullSupplier, PullConsumer) -> Reply

Types:
- SequenceProxyPullSupplier = #objref
- PullConsumer = #objref
- Reply = ok | {'EXCEPTION', 'CosEventChannelAdmin_AlreadyConnected'}

This operation connects a PullConsumer to the target object. If a connection already exists an exception is raised.

pull_structured_events(SequenceProxyPullSupplier, MaxEvents) -> Reply

Types:
- SequenceProxyPullSupplier = #objref
- MaxEvents = long()
- Reply = EventBatch | {'EXCEPTION', 'CosEventChannelAdmin_Disconnected'}
- EventBatch = [StructuredEvent]
- StructuredEvent = [#CosNotification_StructuredEvent'header, filterable_data, remainder_of_body]
- header = EventHeader
- filterable_data = [#CosNotification_Property'name, value]
- name = string()
- value = #any
- remainder_of_body = #any
- EventHeader = [#CosNotification_EventHeader'fixed_header, variable_header]
- fixed_header = FixedEventHeader
cosNotification Reference Manual

...SequenceProxyPullSupplier

- variable_header = OptionalHeaderFields
- FixedEventHeader = #CosNotification_FixedEventHeader'{event_type, event_name}
- event_type = EventType
- event_name = string()
- EventType = #CosNotification_EventType'{domain_name, type_name}
- domain_name = type_name = string()
- OptionalHeaderFields = [ #CosNotification_Property'{name, value}]

A client use this operation to pull next event sequence of maximum length MaxEvents. This operation is blocking and will not reply until the requested amount of events can be delivered or the QoS property PacingInterval is reached. For more information see the User’s Guide.

try_pull_structured_events(SequenceProxyPullSupplier, MaxEvents) -> Reply

Types:
- SequenceProxyPullSupplier = #objref
- MaxEvents = long()
- Reply = {EventBatch, HasEvent} | {EXCEPTION, #CosEventChannelAdmin_Disconnected()}
- HasEvent = boolean()
- EventBatch = [StructuredEvent]
- StructuredEvent = #CosNotification_StructuredEvent'{header, filterable_data, remainder_of_body}
- header = EventHeader
- filterable_data = [ #CosNotification_Property'{name, value}]
- name = string()
- value = #any
- remainder_of_body = #any
- EventHeader = #CosNotification_EventHeader'{fixed_header, variable_header}
- fixed_header = FixedEventHeader
- variable_header = OptionalHeaderFields
- FixedEventHeader = #CosNotification_FixedEventHeader'{event_type, event_name}
- event_type = EventType
- event_name = string()
- EventType = #CosNotification_EventType'{domain_name, type_name}
- domain_name = type_name = string()
- OptionalHeaderFields = [ #CosNotification_Property'{name, value}]

This operation pulls an event sequence of the maximum length MaxEvents, but do not block if the target object have no events to forward. The outparameter, HasEvent is true if the sequence contain any events.

disconnect_sequence_pull_supplier(SequenceProxyPullSupplier) -> ok

Types:
- SequenceProxyPullSupplier = #objref

This operation cause the target object to close the connection and terminate.
CosNotifyChannelAdmin_SupplierAdmin

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module also exports the functions described in:
- CosNotification_QoSAdmin [page 37]
- CosNotifyComm_NotifyPublish [page 78]
- CosNotifyFilter_FilterAdmin [page 83]

Exports

-get_MyID(SupplierAdmin) -> AdminID
  Types:
  • SupplierAdmin = #objref
  • AdminID = long()
  When a SupplierAdmin object is created it is given a unique Id by the creating channel.
  This readonly attribute maintains this Id.

-get_MyChannel(SupplierAdmin) -> Channel
  Types:
  • SupplierAdmin = #objref
  • Channel = #objref
  The creating channel’s reference is maintained by this readonly attribute.

-get_MyOperator(SupplierAdmin) -> OpType
  Types:
  • SupplierAdmin = #objref
  • OpType = 'AND.Op' | 'OR.Op'
  The Operation Type, which determines the semantics the target object will use for any
  associated Filters, is maintained by this readonly attribute.

-get_pull_consumers(SupplierAdmin) -> ProxyIDSeq
  Types:
  • SupplierAdmin = #objref
  • ProxyIDSeq = [ProxyID]
- ProxyID = long()
  A sequence of all associated PullProxy Id's is maintained by this readonly attribute.

get_push_consumers(SupplierAdmin) -> ProxyIDSeq

Types:
- SupplierAdmin = #objref
- ProxyIDSeq = [ProxyID]
- ProxyID = long()
  This operation returns all PushProxy Id's created by the target object.

get_proxy_consumer(SupplierAdmin, ProxyID) -> Reply

Types:
- SupplierAdmin = #objref
- ProxyID = long()
- Reply = Proxy | {'EXCEPTION', #CosNotifyChannelAdmin.ProxyNotFound'}
- Proxy = #objref
  The Proxy which corresponds to the given Id is returned by this operation.

obtain_notification_pull_consumer(SupplierAdmin, SupplierType) -> Reply

Types:
- SupplierAdmin = #objref
- SupplierType = 'ANY_EVENT' | 'STRUCTURED_EVENT' | 'SEQUENCE_EVENT'
- Reply = {Proxy, ProxyID}
- Proxy = #objref
- ProxyID = long()
  This operation creates a new proxy and returns its object reference along with its ID. The SupplierType parameter determines the event type accepted by the proxy.

obtain_pull_consumer(SupplierAdmin) -> Proxy

Types:
- SupplierAdmin = #objref
- Proxy = #objref
  A proxy which accepts #any{} events is created by this operation.

obtain_notification_push_consumer(SupplierAdmin, SupplierType) -> Reply

Types:
- SupplierAdmin = #objref
- SupplierType = 'ANY_EVENT' | 'STRUCTURED_EVENT' | 'SEQUENCE_EVENT'
- Reply = {Proxy, ProxyID}
- Proxy = #objref
- ProxyID = long()
Determined by the SupplierType parameter a compliant proxy is created and its object reference along with its Id is returned by this operation.

```
obtain_push_consumer(SupplierAdmin) -> Proxy
    Types:
    • SupplierAdmin = #objref
    • Proxy = #objref
    A proxy which accepts #any{} events is created by this operation.
```

```
destroy(SupplierAdmin) -> ok
    Types:
    • SupplierAdmin = #objref
    This operation terminates the SupplierAdmin object and notifies the creating channel that the target object no longer is active.
```
CosNotifyComm_NotifyPublish

Erlang Module

To get access to the record definitions for the structures use:
#include_lib("cosNotification/include/*.hrl").
All objects, which inherit this interface, export functions described in this module.

Exports

offer_change(Object, Added, Removed) -> Reply

Types:
- Object = #objref
- Added = Removed = EventTypeSeq
- EventTypeSeq = [type]
- Reply = ok | {'EXCEPTION', CosNotifyComm_InvalidEventType(type)}
- type = '#CosNotification_EventType'(domain_name, type_name)
- domain_name = type_name = string()

Objects supporting this interface can be informed by supplier objects about which type of events that will be delivered in the future. This operation accepts two parameters describing new and old event types respectively. If any of the supplied event type names is syntactically incorrect an exception is raised.
To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").
All objects, which inherit this interface, export functions described in this module.

Exports

subscription_change(Object, Added, Removed) -> Reply

Types:
- Object = #objref
- Added = Removed = EventTypeSeq
- EventTypeSeq = [type]
- Reply = ok | ['EXCEPTION', CosNotifyComm:InvalidEventType(type)]
- type = #CosNotification:EventType\{domain_name, type_name\}
- domain_name = type_name = string()

This operation takes as input two sequences of event type names specifying events the client will and will not accept in the future respectively.
CosNotifyFilter_Filter

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

Exports

-get_constraint_grammar(Filter) -> Grammar

Types:
- Filter = #objref
- Grammar = string()

This operation returns which type of Grammar the Filter uses. Currently, only "EXTENDED_TCL" is supported.

add_constraints(Filter, ConstraintExpSeq) -> Reply

Types:
- Filter = #objref
- ConstraintExpSeq = [Constraint]
- ConstraintExp = #'CosNotifyFilter.ConstraintExp' {event_types, constraint_expr}
- event_types = #'CosNotification.EventTypeSeq'
- constraint_expr = string()
- Reply = ConstraintInfoSeq | ['EXCEPTION', 'CosNotifyFilter.InvalidConstraint' {constr}]
- constr = ConstraintExp
- ConstraintInfoSeq = [ConstraintInfo]
- ConstraintInfo = #'CosNotifyFilter.ConstraintInfo' {constraint_expression, constraint_id}
- constraint_expression = ConstraintExp
- constraint_id = long()

Initially, Filters do not contain any constraints, hence, all events will be forwarded. The add_constraints/2 operation allow us to add constraints to the target object.

modify_constraints(Filter, ConstraintIDSeq, ConstraintInfoSeq) -> Reply

Types:
- Filter = #objref
- ConstraintIDSeq = [ConstraintID]
- ConstraintID = long()
CosNotifyFilter_Filter

CosNotifyFilter_ConstraintInfoSeq = [CosNotifyFilter_ConstraintInfo]
CosNotifyFilter_ConstraintInfo = #CosNotifyFilter_ConstraintInfo(constraint_expression, constraintId)
constraint_expression = ConstraintExp
constraintId = long()
Reply = ok | ('EXCEPTION', #CosNotifyFilter_InvalidConstraint{constr}) | ('EXCEPTION', #CosNotifyFilter_ConstraintNotFound{id})
const = ConstraintExp
id = long()
ConstraintExp = #CosNotifyFilter_ConstraintExp(event_types, constraint_expr)
event_types = #CosNotification_EventTypeSeq()
constraint_expr = string()

This operation is invoked by a client in order to modify the constraints associated with the target object. The constraints related to the Id’s in the parameter sequence ConstraintIDSeq will, if all values are valid, be deleted. The ConstraintInfoSeq parameter contains Id-Expression pairs and a constraint matching one of the unique Id’s will, if all input values are correct, be updated. If the parameters contain incorrect data an exception will be raised.

get_constraints(Filter, ConstraintIDSeq) -> Reply
Types:
  - Filter = #objref
  - ConstraintIDSeq = [ConstraintID]
  - ConstraintID = long()
  - Reply = ConstraintInfoSeq | ('EXCEPTION', #CosNotifyFilter_ConstraintNotFound{id})
  - ConstraintInfoSeq = [ConstraintInfo]
  - ConstraintInfo = #CosNotifyFilter_ConstraintInfo(constraint_expression, constraintId)
  - constraint_expression = ConstraintExp
  - constraintId = id = long()

This operation return a sequence of ConstraintInfo’s related to the given ConstraintID’s, associated with the target object.

get_all_constraints(Filter) -> ConstraintInfoSeq
Types:
  - Filter = #objref
  - ConstraintInfoSeq = [ConstraintInfo]
  - ConstraintInfo = #CosNotifyFilter_ConstraintInfo(constraint_expression, constraintId)
  - constraint_expression = ConstraintExp
  - constraintId = long()

All constraints, and their unique Id, associated with the target object will be returned by this operation.

remove_all_constraints(Filter) -> ok
Types:
- Filter = #objref

All constraints associated with the target object are removed by this operation and, since the target object no longer contain any constraints, true will always be the result of any match operation.

destroy(Filter) -> ok
Types:
- Filter = #objref

This operation terminates the target object.

match(Filter, Event) -> Reply
Types:
- Filter = #objref
- Event = #any
- Reply = boolean() | {'EXCP TION',
  #CosNotifyFilterUnsupportedFilterableData'[]}

This operation accepts an #any{} event and returns true if it satisfies at least one constraint. If the event contains data of the wrong type, e.g., should be a string() but in fact i a short(), an exception is raised.

match_structured(Filter, Event) -> Reply
Types:
- Filter = #objref
- Event = #'CosNotification_StructuredEvent'
- Reply = boolean() | {'EXCPT ION',
  #CosNotifyFilterUnsupportedFilterableData'[]}

This operation is similar to the match operation but accepts structured events instead.

attach_callback(Filter, NotifySubscribe) -> CallbackID
Types:
- Filter = #objref
- NotifySubscribe = #objref
- CallbackID = long()

This operation connects a NotifySubscribe object, which should be informed when the target object’s constraints are updated. A unique Id is returned which must be stored if we ever want to detach the callback object in the future.

detach_callback(Filter, CallbackID) -> Reply
Types:
- Filter = #objref
- CallbackID = long()
- Reply = ok | {'EXCPT ION', #CosNotifyFilter_CallbackNotFound'[]}
If the target object has an associated callback that matches the supplied Id it will be removed and longer informed of any updates. If no object with a matching Id is found an exception is raised.

```plaintext
callbacks(Filter) -> CallbackIDSeq

Types:
  - Filter = #objref
  - CallbackIDSeq = [CallbackID]
  - CallbackID = long()

This operation returns a sequence of all connected NotifySubscribe object Id’s. If no callbacks are associated with the target object the list will be empty.
```
CosNotifyFilter_FilterAdmin

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").
All objects, which inherit this interface, export functions described in this module.

Exports

add_filter(Object, Filter) -> FilterID
Types:
- Object = #objref
- Filter = #objref
- FilterID = long()
This operation connects a new Filter to the target object. This Filter will, together with other associated Filters, be used to select events to forward. A unique Id is returned and should be used if we no longer want to consult the given Filter.

remove_filter(Object, FilterID) -> ok
Types:
- Object = #objref
- FilterID = long()
If a certain Filter no longer should be associated with the target object this operation must be used. Events will no longer be tested against the Filter associated with the given Id.

get_filter(Object, FilterID) -> Reply
Types:
- Object = #objref
- FilterID = long()
- Reply = Filter | {'EXCEPTION', #CosNotifyFilter_FilterNotFound'}
- Filter = #objref
If the target object is associated with a Filter matching the given Id the reference will be returned. If no such Filter is known by the target object an exception is raised.

get_all_flters(Object) -> FilterIDSeq
Types:
Id’s for all Filter objects associated with the target object is returned by this operation.

remove_all_filters(Object) => ok

Types:
- Object = #objref

If we want to remove all Filters associated with the target object we can use this function.
CosNotifyFilter_FilterFactory

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

Exports

create_filter(FilterFactory, Grammar) -> Reply
Types:
  • FilterFactory = objref
  • Grammar = string()
  • Reply = Filter | {ECCEPTION, #CosNotifyFilterInvalidGrammar} |
  • Filter = objref
This operation creates a new Filter object, under the condition that Grammar given is supported. Currently, only "EXTENDED_TCL" is supported.

create_mapping_filter(FilterFactory, Grammar) -> Reply
Types:
  • FilterFactory = objref
  • Grammar = string()
  • Reply = MappingFilter | {ECCEPTION, #CosNotifyFilterInvalidGrammar} |
  • Filter = objref
This operation creates a new MappingFilter object, under the condition that Grammar given is supported. Currently, only "EXTENDED_TCL" is supported.
CosNotifyFilter_MappingFilter

Erlang Module

The main purpose of this module is to match events against associated constraints and
return the value for the first constraint that returns true for the given event. If all
constraints return false the default value will be returned.

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

Exports

_get_constraint_grammar(MappingFilter) -> Grammar
Types:
  • MappingFilter = #objref
  • Grammar = string()
This operation returns which type of Grammar the MappingFilter uses. Currently, only
"EXTENDED_TCL" is supported.

_get_value_type(MappingFilter) -> CORBA::TypeCode
Types:
  • MappingFilter = #objref
This readonly attribute maintains the CORBA::TypeCode of the default value associated
with the target object.

_get_default_value(MappingFilter) -> #any
Types:
  • MappingFilter = #objref
This readonly attribute maintains the #any{} default value associated with the target
object.

add_mapping_constraints(MappingFilter, MappingConstraintPairSeq) -> Reply
Types:
  • MappingFilter = #objref
  • MappingConstraintPairSeq = [MappingConstraintPair]
  • MappingConstraintPair = #CosNotifyFilter_MappingConstraintPair’{constraint_expression, result_to_set}
  • constraint_expression = #CosNotifyFilter_ConstraintExp’{event_types, constraint_expr}
This operation add new mapping constraints, which will be used when trying to override Quality of Service settings defined in the given event. If a constraint return true the associated value will be returned, otherwise the default value.

modify_constraints(MappingFilter, ConstraintIDSeq, MappingConstraintInfoSeq) -> Reply

Types:

- MappingFilter = #objref
- ConstraintIDSeq = [ConstraintID]
- ConstraintID = long()
- MappingConstraintInfoSeq = [MappingConstraintInfo]
- MappingConstraintInfo = #CosNotifyFilter_MappingConstraintInfo(constraint_expression, constraint_id, value)
- constraint_expression = ConstraintExp
- constraint_id = long()
- value = #any
- ConstraintInfoSeq = [ConstraintInfo]
- ConstraintInfo = #CosNotifyFilter_ConstraintInfo(constraint_expression, constraint_id)
- constraint_expression = ConstraintExp
- constraint_id = long()
- Reply = ok | {'EXCEPTION', #CosNotifyFilter_InvalidConstraint(constr)} | {'EXCEPTION', #CosNotifyFilter_InvalidValue(constr, value)}
- constr = ConstraintExp
- id = long()
- value = #any
- ConstraintExp = #CosNotifyFilter_ConstraintExp(event_types, constraint_expr)
- event_types = #CosNotification_EventTypeSeq{}
- constraint_expr = string()
The `ConstraintIDSeq` supplied should relate to constraints the caller wishes to remove. If any of the supplied Id's are not found an exception will be raised. This operation also accepts a sequence of `MappingConstraintInfo` which will be added. If the target object cannot modify the constraints as requested an exception is raised describing which constraint, and why, could not be updated.

```
get_mapping_constraints(MappingFilter, ConstraintIDSeq) -> Reply
```

Types:
- `MappingFilter = #objref`
- `ConstraintIDSeq = [ConstraintID]`
- `ConstraintID = long()`
- `Reply = MappingConstraintInfoSeq | 'EXCEPTION', #CosNotifyFilter_ConstraintNotFound{id}]`
- `MappingConstraintInfoSeq = [MappingConstraintInfo]`
- `MappingConstraintInfo = #CosNotifyFilter_MappingConstraintInfo{constraint_expression, constraint_id, value}`
- `constraint_expression = ConstraintExp`
- `ConstraintExp = #CosNotifyFilter_ConstraintExp{event_types, constraint_expr}`
- `event_types = #CosNotification_EventTypeSeq()`
- `constraint_expr = string()`
- `constraint_id = id = long()`
- `value = #any`

When adding a new constraint a unique Id is returned, which is accepted as input for this operation. The associated constraint is returned, but if no such Id exists an exception is raised.

```
get_all_mapping_constraints(MappingFilter) -> MappingConstraintInfoSeq
```

Types:
- `MappingFilter = #objref`
- `MappingConstraintInfoSeq = [MappingConstraintInfo]`
- `MappingConstraintInfo = #CosNotifyFilter_MappingConstraintInfo{constraint_expression, constraint_id, value}`
- `constraint_expression = ConstraintExp`
- `ConstraintExp = #CosNotifyFilter_ConstraintExp{event_types, constraint_expr}`
- `event_types = #CosNotification_EventTypeSeq()`
- `constraint_expr = string()`
- `constraint_id = id = long()`
- `value = #any`

This operation returns a sequence of all unique Id's associated with the target object. If no constraint have been added the sequence will be empty.

```
remove_all_mapping_constraints(MappingFilter) -> ok
```

Types:
- `MappingFilter = #objref`
This operation removes all constraints associated with the target object.

```haskell
destroy(MappingFilter) -> ok
```

**Types:**
- `MappingFilter = #objref`

This operation terminates the target object. Remember to remove this Filter from the objects it have been associated with.

```haskell
match(MappingFilter, Event) -> Reply
```

**Types:**
- `MappingFilter = #objref`
- `Event = #any`
- `Reply = {boolean(), #any} | {'EXCEPTION', #CosNotifyFilterUnsupportedFilterableData{}}`

This operation evaluates any events with the Filter’s constraints, and returns the value to use. The value is the default value if all constraints returns false and the value associated with the first constraint returning true.

```haskell
match_structured(MappingFilter, Event) -> Reply
```

**Types:**
- `MappingFilter = #objref`
- `Event = #CosNotification_StructuredEvent{}`
- `Reply = {boolean(), #any} | {'EXCEPTION', #CosNotifyFilterUnsupportedFilterableData{}}`

Similar to `match/2` but accepts a structured event as input.


**cosNotificationApp**

Erlang Module

To get access to the record definitions for the structures use:
-include_lib("cosNotification/include/*.hrl").

This module contains the functions for starting and stopping the application.

**Exports**

install() -> Return

Types:
- Return = ok | {'EXCEPTION', E}

This operation installs the cosNotification application.

install(Seconds) -> Return

Types:
- Return = ok | {'EXCEPTION', E}

This operation installs the cosNotification application using Seconds delay between each block, currently 6, of IFR-registrations. This approach spreads the IFR database access over a period of time to allow other applications to run smoother.

install_event() -> Return

Types:
- Return = ok | {'EXCEPTION', E}

This operation, which may only be used if it is impossible to upgrade to cosEvent-2.0 or later, installs the necessary cosEvent interfaces. If cosEvent-2.0 is available, use cosEventApp:install() instead.

install_event(Seconds) -> Return

Types:
- Return = ok | {'EXCEPTION', E}

This operation, which may only be used if it is impossible to upgrade to cosEvent-2.0 or later, installs the necessary cosEvent interfaces using Seconds delay between each block of IFR-registrations. If cosEvent-2.0 is available, use cosEventApp:install() instead.

uninstall() -> Return

Types:
This operation uninstalls the cosNotification application.

\texttt{uninstall(Seconds)} \rightarrow \texttt{Return}

Types:
- \texttt{Return} = \texttt{ok} | \{‘EXCEPTION’, E\}

This operation uninstalls the cosNotification application using \texttt{Seconds} delay between each block, currently 6, of IFR-unregistrations. This approach spreads the IFR database access over a period of time to allow other applications to run smoother.

uninstall\_event() \rightarrow \texttt{Return}

Types:
- \texttt{Return} = \texttt{ok} | \{‘EXCEPTION’, E\}

This operation uninstalls the inherited cosEvent interfaces. If cosEvent is in use this function may not be used. This function may only be used if \texttt{cosNotificationApp:install\_event/1/2} was used. If not, use \texttt{cosEventApp:uninstall()} instead.

\texttt{uninstall\_event(Seconds)} \rightarrow \texttt{Return}

Types:
- \texttt{Return} = \texttt{ok} | \{‘EXCEPTION’, E\}

This operation uninstalls the inherited cosEvent interfaces, using \texttt{Seconds} delay between each block of IFR-unregistrations. If cosEvent is in use this function may not be used. This function may only be used if \texttt{cosNotificationApp:install\_event/1/2} was used. If not, use \texttt{cosEventApp:uninstall()} instead.

\texttt{start()} \rightarrow \texttt{Return}

Types:
- \texttt{Return} = \texttt{ok} | \{error, Reason\}

This operation starts the cosNotification application.

\texttt{stop()} \rightarrow \texttt{Return}

Types:
- \texttt{Return} = \texttt{ok} | \{error, Reason\}

This operation stops the cosNotification application.

\texttt{start\_global\_factory()} \rightarrow \texttt{ChannelFactory}

Types:
- \texttt{ChannelFactory} = \#objref

This operation creates a Event Channel Factory [page 57] should be used for a multi-node Orber. The Factory is used to create a new channel [page 54].

\texttt{start\_global\_factory(Options)} \rightarrow \texttt{ChannelFactory}
Types:
- Options = [Option]
- Option = [{pullInterval, Seconds} | {filterOp, Op} | {gcTime, Seconds} | {gcLimit, Amount} | {timeService, #objref}]
- ChannelFactory = #objref

This operation creates a Event Channel Factory [page 57] and should be used for a multi-node Orber. The Factory is used to create a new channel [page 54].

- {pullInterval, Seconds} - determine how often Proxy Pull Consumers will check for new events with the client application. The default value is 20 seconds.
- {filterOp, OperationType} - determine which type of Administrator objects should be started, i.e., 'OR.OP' or 'AND.OP'. The default value is 'OR.OP'.
- {timeService, TimeServiceObj | 'undefined'} - to be able to use Start and/or Stop QoS this option must be used. See the function start time service/2 in the cosTime application. The default value is 'undefined'.
- {filterOp, OperationType} - determine which type of Administrator objects should be started, i.e., 'OR.OP' or 'AND.OP'. The default value is 'OR.OP'.
- {gcTime, Seconds} - this option determines how often, for example, proxies will garbage collect expired events. The default value is 60.
- {gcLimit, Amount} - determines how many events will be stored before, for example, proxies will garbage collect expired events. The default value is 50. This option is tightly coupled with the QoS property MaxEventsPerConsumer, i.e., the gcLimit should be less than MaxEventsPerConsumer and greater than 0.

start_factory() -> ChannelFactory
Types:
- ChannelFactory = #objref

This operation creates a Event Channel Factory [page 57]. The Factory is used to create a new channel [page 54].

start_factory(Options) -> ChannelFactory
Types:
- Options = [Option]
- Option = [{pullInterval, Seconds} | {filterOp, Op} | {gcTime, Seconds} | {gcLimit, Amount} | {timeService, #objref}]
- ChannelFactory = #objref

This operation creates a Event Channel Factory [page 57]. The Factory is used to create a new channel [page 54].

stop_factory(ChannelFactory) -> Reply
Types:
- ChannelFactory = #objref
- Reply = ok | {'EXCEPTION', E}

This operation stop the target channel factory.
start_filter_factory() -> FilterFactory

Types:
- FilterFactory = #objref

This operation creates a Filter Factory [page 85]. The Factory is used to create a new Filter's [page 79] and MappingFilter's [page 86].

stop_filter_factory(FilterFactory) -> Reply

Types:
- FilterFactory = #objref
- Reply = ok | {'EXCEPTION', E}

This operation stops the target filter factory.

create_structured_event(Domain, Type, Event, VariableHeader, FilterableBody, BodyRemainder) -> Reply

Types:
- Domain = string()
- Type = string()
- Event = string()
- VariableHeader = [CosNotification::Property]
- FilterableBody = [CosNotification::Property]
- BodyRemainder = #any data-type
- Reply = CosNotification::StructuredEvent | {'EXCEPTION', E}

An easy way to create a structured event is to use this function. Simple type checks are performed and if one of the arguments is not correct a 'BAD_PARAM' exception is thrown.

type_check() -> Reply

Types:
- Reply = true | false

This operation returns the value of the configuration parameter type_check.
List of Figures

1.1 Figure 1: The Notification Service Components .............................. 4
1.2 Figure 1: The structure of a structured event. ............................... 11
List of Tables

1.1 Global Configuration Parameters .................................................. 3
1.2 Table 1: Type and Operator Examples ............................................. 11
1.3 Table 2: Fixed Header Constraint Examples ..................................... 12
1.4 Table 1: Supported QoS Settings .................................................... 13
1.5 Table 2: Supported Admin Properties .............................................. 15
Index of Modules and Functions

Modules are typed in this way. Functions are typed in this way.

'AnyOrder'/0
CosNotification, 34

'BestEffort'/0
CosNotification, 33

'ConnectionReliability'/0
CosNotification, 33

'DeadlineOrder'/0
CosNotification, 34

'DefaultPriority'/0
CosNotification, 33

'DiscardPolicy'/0
CosNotification, 34

'EventReliability'/0
CosNotification, 33

'FifoOrder'/0
CosNotification, 34

'HighestPriority'/0
CosNotification, 33

'LifoOrder'/0
CosNotification, 34

'LovestPriority'/0
CosNotification, 33

'MaxConsumers'/0
CosNotification, 35

'MaxEventsPerConsumer'/0
CosNotification, 34

'MaxQueueLength'/0
CosNotification, 35

'MaxSuppliers'/0
CosNotification, 35

'MaximumBatchSize'/0
CosNotification, 34

'OrderPolicy'/0

CosNotification, 34

'PacingInterval'/0
CosNotification, 34

'Persistent'/0
CosNotification, 33

'Priority'/0
CosNotification, 33

'PriorityOrder'/0
CosNotification, 34

'RejectNewEvents'/0
CosNotification, 34

'StartTime'/0
CosNotification, 33

'StartTimeSupported'/0
CosNotification, 34

'StopTime'/0
CosNotification, 33

'StopTimeSupported'/0
CosNotification, 34

'Timeout'/0
CosNotification, 34

_get_MyAdmin/1
CosNotifyChannelAdmin_ProxyConsumer, 58
CosNotifyChannelAdmin_ProxySupplier, 67

_get_MyChannel/1
CosNotifyChannelAdmin_ConsumerAdmin, 51
CosNotifyChannelAdmin_SupplierAdmin, 74

_get_MyFactory/1
CosNotifyChannelAdmin_EventChannel, 54

CosNotification Application
# Index of Modules and Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Module</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>_get_MyID/1</td>
<td>CosNotifyChannelAdmin_MIN_CONSUMERADMIN</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_SUPPLIERADMIN</td>
<td>54</td>
</tr>
<tr>
<td>_get_MyOperator/1</td>
<td>CosNotifyChannelAdmin_MIN_CONSUMERADMIN</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_SUPPLIERADMIN</td>
<td>54</td>
</tr>
<tr>
<td>_get_MyType/1</td>
<td>CosNotifyChannelAdmin_PROXYCONSUMER</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_PROXYSUPPLIER</td>
<td>67</td>
</tr>
<tr>
<td>_get_constraint_grammar/1</td>
<td>CosNotifyFilter_Filter</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>CosNotifyFilter_MappingFilter</td>
<td>86</td>
</tr>
<tr>
<td>_get_default_consumer_admin/1</td>
<td>CosNotifyChannelAdminEventChannel</td>
<td>54</td>
</tr>
<tr>
<td>_get_default_consumer_filter/1</td>
<td>CosNotifyChannelAdminEventChannel</td>
<td>54</td>
</tr>
<tr>
<td>_get_default_filter_factory/1</td>
<td>CosNotifyChannelAdmin_MIN_CONSUMERADMIN</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_PROXYSUPPLIER</td>
<td>68</td>
</tr>
<tr>
<td>_get_default_supplier_admin/1</td>
<td>CosNotifyChannelAdminEventChannel</td>
<td>54</td>
</tr>
<tr>
<td>_get_default_supplier_filter/1</td>
<td>CosNotifyChannelAdmin_MIN_CONSUMERADMIN</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_PROXYSUPPLIER</td>
<td>68</td>
</tr>
<tr>
<td>_get_value_type/1</td>
<td>CosNotifyFilter_MappingFilter</td>
<td>86</td>
</tr>
<tr>
<td>_set_lifetime_filter/2</td>
<td>CosNotifyChannelAdmin_MIN_CONSUMERADMIN</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_PROXYSUPPLIER</td>
<td>68</td>
</tr>
<tr>
<td>_set_priority_filter/2</td>
<td>CosNotifyChannelAdmin_MIN_CONSUMERADMIN</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>CosNotifyChannelAdmin_PROXYSUPPLIER</td>
<td>68</td>
</tr>
<tr>
<td>add_constraints/2</td>
<td>CosNotifyFilter_Filter</td>
<td>79</td>
</tr>
<tr>
<td>add_filter/2</td>
<td>CosNotifyFilter_FilterAdmin</td>
<td>83</td>
</tr>
<tr>
<td>add_mapping_constraints/2</td>
<td>CosNotifyFilter_MappingFilter</td>
<td>86</td>
</tr>
<tr>
<td>attach_callback/2</td>
<td>CosNotifyFilter_Filter</td>
<td>81</td>
</tr>
<tr>
<td>connect_any_pull_consumer/2</td>
<td>CosNotifyChannelAdmin_MIN_PROXYPULLSUPPLIER</td>
<td>62</td>
</tr>
<tr>
<td>connect_any_pull_supplier/2</td>
<td>CosNotifyChannelAdmin_MIN_PROXYPULLCONSUMER</td>
<td>60</td>
</tr>
<tr>
<td>connect_any_push_consumer/2</td>
<td>CosNotifyChannelAdmin_MIN_PROXYPUSHSUPPLIER</td>
<td>65</td>
</tr>
<tr>
<td>connect_any_push_supplier/2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Index of Modules and Functions

CosNotifyChannelAdmin

connect_sequence_pull_consumer/2

CosNotifyChannelAdmin

connect_sequence_pull_supplier/2

CosNotifyChannelAdmin

connect_sequence_push_consumer/2

CosNotifyChannelAdmin

connect_sequence_push_supplier/2

CosNotifyChannelAdmin

CosNotification

'tAnyOrder'/0, 34
'tBestEffort'/0, 33
'tConnectionReliability'/0, 33
'tDeadlineOrder'/0, 34
'tDefaultPriority'/0, 33
'tDiscardPolicy'/0, 34
'tEventReliability'/0, 33
'tFifoOrder'/0, 34
'tHighestPriority'/0, 33
'tLifoOrder'/0, 34
'tLowestPriority'/0, 33
'tMaxConsumers'/0, 35
'tMaxEventsPerConsumer'/0, 34
'tMaxQueueLength'/0, 35
'tMaxSuppliers'/0, 35
'tMaximumBatchSize'/0, 34
'tOrderPolicy'/0, 34
'tPacingInterval'/0, 34
'tPersistent'/0, 33
'tPriority'/0, 33
'tPriorityOrder'/0, 34
'rejectNewEvents'/0, 34
'startTime'/0, 33
'startTimeSupported'/0, 34
'stopTime'/0, 33
'stopTimeSupported'/0, 34
'timeout'/0, 34

CosNotification_AdminPropertiesAdmin

get_admin/1, 36
set_admin/2, 36

CosNotification_QoSAdmin

get_qos/1, 37
set_qos/2, 37
validate_qos/2, 38

CosNotification_App

create_structured_event/6, 93
install/0, 90
install/1, 90
install_event/0, 90
install_event/1, 90
start/0, 91
start_factory/0, 92
start_factory/1, 92
start_filter_factory/0, 93
start_filter_factory/1, 91
start_global_factory/0, 91
start_global_factory/1, 91
stop/0, 91
stop_factory/1, 92
stop_filter_factory/1, 93
type_check/0, 93
uninstall/0, 90
uninstall/1, 91
uninstall_event/0, 91
uninstall_event/1, 91

CosNotifyChannelAdmin_ConsumerAdmin

_get_MyChannel/1, 51
_get_MyID/1, 51
_get_MyOperator/1, 51
_get_lifetime_filter/1, 52
_get_priority_filter/1, 51
_get_pull_suppliers/1, 52
_get_push_suppliers/1, 52
_set_lifetime_filter/2, 52
_set_priority_filter/2, 52
destroy/1, 53
get_proxy_supplier/2, 52
obtain_notification_pull_supplier/2, 53
obtain_notification_push_supplier/2, 53
obtain_pull_supplier/1, 53
obtain_push_supplier/1, 53

CosNotifyChannelAdmin_EventChannelFactory
create_channel/3, 57
get_all_channels/1, 57
get_event_channel/2, 57

CosNotifyChannelAdmin_ProxyConsumer
_get_MyAdmin/1, 58
_get_MyType/1, 58
obtain_subscription_types/2, 58
validate_event_qos/2, 58

CosNotifyChannelAdmin_ProxyPullConsumer
connect_any_pull_supplier/2, 60
disconnect_pull_consumer/1, 61
resume_connection/1, 60
suspend_connection/1, 60

disconnect_pull_consumer/1, 63
pull/1, 62
try_pull/1, 62

CosNotifyChannelAdmin_ProxyPushConsumer
connect_any_push_supplier/2, 64
disconnect_push_consumer/1, 64
push/2, 64

CosNotifyChannelAdmin_ProxyPushSupplier
connect_any_pull_consumer/2, 65
disconnect_push_supplier/1, 66
resume_connection/1, 66

suspend_connection/1, 65

CosNotifyChannelAdmin_ProxySupplier
_get_MyAdmin/1, 67
_get_MyType/1, 67
_get_lifetime_filter/1, 68
_get_priority_filter/1, 67
_set_lifetime_filter/2, 67
_set_priority_filter/2, 67
obtain_offered_types/2, 68
validate_event_qos/2, 68

CosNotifyChannelAdmin_SequenceProxyPullConsumer
connect_sequence_pull_supplier/2, 70
disconnect_sequence_pull_consumer/1, 71
resume_connection/1, 70
suspend_connection/1, 70

CosNotifyChannelAdmin_SequenceProxyPullSupplier
connect_sequence_pull_consumer/2, 72
disconnect_sequence_pull_supplier/1, 73
pull_structured_events/2, 72
try_pull_structured_events/2, 73

CosNotifyChannelAdmin_SequenceProxyPushConsumer
connect_sequence_push_consumer/2, 39
disconnect_sequence_push_consumer/1, 40
push_structured_events/2, 39

CosNotifyChannelAdmin_SequenceProxyPushSupplier
connect_sequence_push_supplier/2, 41
disconnect_sequence_push_consumer/1, 42
resume_connection/1, 41
suspend_connection/1, 41

CosNotifyChannelAdmin_StructuredProxyPullConsumer
connect_structured_pull_supplier/2, 43
disconnect_structured_pull_consumer/1, 44
resume_connection/1, 43
suspend_connection/1, 43

CosNotifyChannelAdmin_StructuredProxyPushSupplier
connect_structured_push_consumer/2, 45
disconnect_structured_pull_supplier/1, 46
pull_structured_event/1, 45
try_pull_structured_event/1, 46

CosNotifyChannelAdmin_StructuredProxyPushConsumer
connect_structured_push_supplier/2,
Index of Modules and Functions

47
disconnect_structured_push_consumer/1, 48
push_structured_event/2, 47

CosNotifyChannelAdmin_StructuredProxyPushSupplier
connect_structured_push_consumer/2, 49
disconnect_structured_push_supplier/1, 50
resume_connection/1, 49
suspend_connection/1, 49

CosNotifyChannelAdmin_SupplierAdmin
_get_MyChannel/1, 74
_get_MyID/1, 74
_get_MyOperator/1, 74
_get_pull_consumers/1, 74
_get_push_consumers/1, 75
destroy/1, 76
get_proxy_consumer/2, 75
obtain_notification_pull_consumer/2, 75
obtain_notification_push_consumer/2, 75
obtain_pull_consumer/1, 75
obtain_push_consumer/1, 76

CosNotifyComm_NotifySubscribe
subscription_change/3, 78

CosNotifyComm_NotifyPublish
offer_change/3, 77

CosNotifyFilter_Filter
_get_constraint_grammar/1, 79
add_constraints/2, 79
attach_callback/2, 81
destroy/1, 81
detach_callback/2, 81
get_all_constraints/1, 80
get_callbacks/1, 82
get_constraints/2, 80
match/2, 81
match_structured/2, 81
modify_constraints/3, 79
remove_all_constraints/1, 80

CosNotifyFilter_Admin
add_filter/2, 83
get_all_filters/1, 83
get_filter/2, 83
remove_all_filters/1, 84
remove_filter/2, 83

CosNotifyFilter.Factory
create_filter/2, 85
create_mapping_filter/2, 85

CosNotifyFilter_MappingFilter
_get_constraint_grammar/1, 86
_get_default_value/1, 86
_get_value_type/1, 86
add_mapping_constraints/2, 86
destroy/1, 89
get_all_mapping_constraints/1, 88
get_mapping_constraints/2, 88
match/2, 89
match_structured/2, 89
modify_constraints/3, 87
remove_all_mapping_constraints/1, 88
create_channel/3
CosNotifyChannelAdmin_EventChannelFactory, 57
cosNotificationApplication, 93
destroy/1
CosNotifyChannelAdmin_ConsumerAdmin, 53
CosNotifyChannelAdmin_EventChannel, 56
CosNotifyChannelAdmin_SupplierAdmin, 76
CosNotifyFilter_Filter, 81
CosNotifyFilter_MappingFilter, 89
detach_callback/2
CosNotifyFilter_Filter, 81
disconnect_pull_consumer/1
CosNotifyChannelAdmin_ProxyPullConsumer, 61
disconnect_pull_supplier/1
CosNotifyChannelAdmin_ProxyPullSupplier, 63
disconnect_push_consumer/1
CosNotifyChannelAdmin_ProxyPushConsumer,
Index of Modules and Functions

64
disconnect_push_supplier/1
CosNotifyChannelAdminProxyPushSupplier,
66
disconnect_sequence_pull_consumer/1
CosNotifyChannelAdminSequenceProxyPullConsumer,
71
disconnect_sequence_pull_supplier/1
CosNotifyChannelAdminSequenceProxyPullSupplier,
73
disconnect_sequence_push_consumer/1
CosNotifyChannelAdminSequenceProxyPushConsumer,
40
disconnect_sequence_push_supplier/1
CosNotifyChannelAdminSequenceProxyPushSupplier,
42
disconnect_structured_pull_consumer/1
CosNotifyChannelAdminStructuredProxyPullConsumer,
44
disconnect_structured_pull_supplier/1
CosNotifyChannelAdminStructuredProxyPullSupplier,
46
disconnect_structured_push_consumer/1
CosNotifyChannelAdminStructuredProxyPushConsumer,
48
disconnect_structured_push_supplier/1
CosNotifyChannelAdminStructuredProxyPushSupplier,
50
for_consumers/1
CosNotifyChannelAdminEventChannel,
55
for_suppliers/1
CosNotifyChannelAdminEventChannel,
55
get_admin/1
CosNotificationAdminPropertiesAdmin,
36
get_all_channels/1
CosNotifyChannelAdminEventChannelFactory,
57
get_all_constraints/1
CosNotifyFilterFilter,
80
get_all_consumeradmins/1
CosNotifyChannelAdminEventChannel,
56
get_all_filters/1
CosNotifyFilterFilterAdmin,
83
get_all_mapping_constraints/1
CosNotifyFilterMappingFilter,
88
get_all_supplieradmins/1
CosNotifyChannelAdminEventChannel,
56
get_callbacks/1
CosNotifyFilterFilter,
82
get_constraints/2
CosNotifyFilterFilter,
80
get_consumeradmin/2
CosNotifyChannelAdminEventChannel,
55
get_event_channel/2
CosNotifyChannelAdminEventChannelFactory,
57
get_filter/2
CosNotifyFilterFilterAdmin,
83
get_mapping_constraints/2
CosNotifyFilterMappingFilter,
88
get_proxy_consumer/2
CosNotifyChannelAdminSupplierAdmin,
75
get_proxy_supplier/2
CosNotifyChannelAdminConsumerAdmin,
52
get_qos/1
CosNotificationQoSAdmin,
37
get_supplieradmin/2
CosNotifyChannelAdminEventChannel,
56
install/0
CosNotificationApp,
90
install/1  
  cosNotificationApp, 90
install_event/0  
  cosNotificationApp, 90
install_event/1  
  cosNotificationApp, 90

match/2  
  CosNotifyFilter_Filter, 81  
  CosNotifyFilter_MappingFilter, 89
match_structured/2  
  CosNotifyFilter_Filter, 81  
  CosNotifyFilter_MappingFilter, 89
modify_constraints/3  
  CosNotifyFilter_Filter, 79  
  CosNotifyFilter_MappingFilter, 87

new_for_consumers/2  
  CosNotifyChannelAdmin_EventChannel, 55
new_for_suppliers/2  
  CosNotifyChannelAdmin_EventChannel, 55

obtain_notification_pull_consumer/2  
  CosNotifyChannelAdmin_SupplierAdmin, 53
obtain_notification_pull_supplier/2  
  CosNotifyChannelAdmin_ConsumerAdmin, 53
obtain_notification_push_consumer/2  
  CosNotifyChannelAdmin_SupplierAdmin, 75
obtain_notification_push_supplier/2  
  CosNotifyChannelAdmin_ConsumerAdmin, 75
obtain_offered_types/2  
  CosNotifyChannelAdmin_ProxySupplier, 68
obtain_pull_consumer/1  
  CosNotifyChannelAdmin_SupplierAdmin, 75
obtain_push_consumer/1  
  CosNotifyChannelAdmin_SupplierAdmin, 53
obtain_push_supplier/1  
  CosNotifyChannelAdmin_ConsumerAdmin, 53
obtain_subscription_types/2  
  CosNotifyChannelAdmin_ProxyConsumer, 58
offer_change/3  
  CosNotifyComm_NotifyPublish, 77

pull/1  
  CosNotifyChannelAdmin_ProxyPullSupplier, 62
pull_structured_event/1  
  CosNotifyChannelAdmin_StructuredProxyPullSupplier, 45
pull_structured_events/2  
  CosNotifyChannelAdmin_SequenceProxyPullSupplier, 72
push/2  
  CosNotifyChannelAdmin_ProxyPushConsumer, 64
push_structured_event/2  
  CosNotifyChannelAdmin_StructuredProxyPushConsumer, 47
push_structured_events/2  
  CosNotifyChannelAdmin_SequenceProxyPushConsumer, 39
remove_all_constraints/1  
  CosNotifyFilter_Filter, 80
remove_all_filters/1  
  CosNotifyFilter_Admin, 84
remove_all_mapping_constraints/1  
  CosNotifyFilter_MappingFilter, 88

Index of Modules and Functions
Index of Modules and Functions

remove_filter/2  
   CosNotifyFilter_AdminAdmin , 83
resume_connection/1  
   CosNotifyChannelAdmin_ProxyPullConsumer , 60
   CosNotifyChannelAdmin_ProxyPushSupplier , 65
   CosNotifyChannelAdmin_SequenceProxyPullConsumer , 70
   CosNotifyChannelAdmin_SequenceProxyPushSupplier , 41
   CosNotifyChannelAdmin_StructuredProxyPullConsumer , 43
   CosNotifyChannelAdmin_StructuredProxyPushSupplier , 49

set_admin/2  
   CosNotify_AdminPropertiesAdmin , 36
set_qos/2  
   CosNotify_QoSAdmin , 37
start/0  
   cosNotificationApp , 91
start_factory/0  
   cosNotificationApp , 92
start_factory/1  
   cosNotificationApp , 92
start_filter_factory/0  
   cosNotificationApp , 93
start_global_factory/0  
   cosNotificationApp , 91
start_global_factory/1  
   cosNotificationApp , 91
stop/0  
   cosNotificationApp , 91
stop_factory/1  
   cosNotificationApp , 92
stop_filter_factory/1  
   cosNotificationApp , 93
subscription_change/3  
   CosNotifyComm.NotifySubscribe , 78

suspend_connection/1  
   CosNotifyChannelAdmin_ProxyPullConsumer , 60
   CosNotifyChannelAdmin_ProxyPushSupplier , 65
   CosNotifyChannelAdmin_SequenceProxyPullConsumer , 70
   CosNotifyChannelAdmin_SequenceProxyPushSupplier , 41
   CosNotifyChannelAdmin_StructuredProxyPullConsumer , 43
   CosNotifyChannelAdmin_StructuredProxyPushSupplier , 49

try_pull/1  
   CosNotifyChannelAdmin_ProxyPullSupplier , 62
try_pull_structured_event/1  
   CosNotifyChannelAdmin_StructuredProxyPullSupplier , 46
try_pull_structured_events/2  
   CosNotifyChannelAdmin_SequenceProxyPullSupplier , 73

type_check/0  
   cosNotificationApp , 93

uninstall/0  
   cosNotificationApp , 90
uninstall/1  
   cosNotificationApp , 91
uninstall_event/0  
   cosNotificationApp , 91
uninstall_event/1  
   cosNotificationApp , 91

validate_event_qos/2  
   CosNotifyChannelAdmin_ProxyConsumer , 59
   CosNotifyChannelAdmin_ProxySupplier , 68

106  
   cosNotificationApp
<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>validate_qos/2</code></td>
<td></td>
</tr>
<tr>
<td><code>CosNotification_QoSAdmin</code>, 38</td>
<td></td>
</tr>
</tbody>
</table>
Index of Modules and Functions