Content

[2 Classes 1](#_Toc147316670)

[2.1 EthernetContainerFdCapability 1](#_Toc147316671)

[2.2 EthernetContainerFdConfiguration 3](#_Toc147316672)

[2.3 EthernetContainerFdSpec 4](#_Toc147316673)

[2.4 EthernetContainerFdStatus 4](#_Toc147316674)

[2.5 EthernetContainerFd\_Pac 5](#_Toc147316675)

[3 Data Types 6](#_Toc147316676)

[3.1 AvailableQueueType 6](#_Toc147316677)

[3.2 QueueBehaviorType 8](#_Toc147316678)

[3.3 wredBehaviorType 9](#_Toc147316679)

[4 Enumeration Types 10](#_Toc147316680)

[4.1 DropPrecedenceType 10](#_Toc147316681)

[4.2 DroppingBehaviorKindType 10](#_Toc147316682)

[4.3 FdStatusType 11](#_Toc147316683)

[4.4 LayerProtocolNameType 11](#_Toc147316684)

[4.5 ProtocolLayerType 12](#_Toc147316685)

[4.6 QueueNameType 12](#_Toc147316686)

[4.7 SchedulerKindType 13](#_Toc147316687)

[5 Primitive Types 13](#_Toc147316688)

# Classes

## EthernetContainerFdCapability

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO
* OpenModelClass
* support: MANDATORY

Attributes for EthernetContainerFdCapability

Table 1: Attributes for EthernetContainerFdCapability

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| configuringSeparatedLayer1ForwardingsIsAvail | Boolean  false | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | true = Component supports grouping of interfaces (EthernetContainer) for separated layer 1 frame forwarding. |
| frameForwardingWithoutVlanIsAvail | Boolean  false | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | true = Component supports forwarding of frames as a bare MAC switching without VLANs. |
| queueDepthConfigurationIsAvail | Boolean  false | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This attribute has to be set on 'true', if the queue depth can be configured for the entire switch. |
| droppingBehaviorConfigurationIsAvail | Boolean  false | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This attribute has to be set on 'true', if the dropping behavior can be configured for the entire switch |
| wredProfileConfigurationIsAvail | Boolean  false | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This attribute has to be set on 'true', if the WRED Profile can be configured for the entire switch. |
| schedulerKindConfigurationIsAvail | Boolean  false | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | This attribute has to be set on 'true', if the kind of scheduler can be configured for the entire switch |
| availableQueueList | AvailableQueueType  ./. | 1..8 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | List of queues, which are available at the physical interface. |

## EthernetContainerFdConfiguration

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO
* OpenModelClass
* support: MANDATORY

Attributes for EthernetContainerFdConfiguration

Table 1: Attributes for EthernetContainerFdConfiguration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| fdName | String  Forwarding Domain name not yet defined. | 1 | RW | Reference  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | The name of the Component. Free text field to be filled by the operator. |
| queueBehaviorList | QueueBehaviorType  ./. | 1..8 | RW | OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | Defines scheduling and dropping behavior of all queues. |
| \_schedulerProfile | Profile  ./. | 1 | RW | OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |

## EthernetContainerFdSpec

The set of components associated with a given Bridge. For example, - A TPMR is associated with a single VLAN unaware component. - A Customer VLAN Bridge is associated with a single VLAN aware component. - A Provider Bridge is associated with a single S-VLAN component and zero or more C-VLAN components. Name in ieee802-dot1q-bridge.yang: component.

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: YES
* objectDeletionNotification: YES
* OpenModelClass
* support: MANDATORY

Attributes for EthernetContainerFdSpec

Table 1: Attributes for EthernetContainerFdSpec

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| \_ethernetContainerFd\_Pac | EthernetContainerFd\_Pac  ./. | 1 | RW | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |

## EthernetContainerFdStatus

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO
* OpenModelClass
* support: MANDATORY

Attributes for EthernetContainerFdStatus

Table 1: Attributes for EthernetContainerFdStatus

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| fdStatus | FdStatusType  NOT\_YET\_DEFINED | 1 | R | OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | Operational status of the forwarding domain. |

## EthernetContainerFd\_Pac

If the Ethernet switch is forwarding incoming frames to all interfaces until it made an entry about a source MAC address in its table as a default, there shall be an EthernetContainerFc connecting all the interfaces of the Ethernet switch as an initial state.

Applied stereotypes:

* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO
* OpenModelClass
* support: MANDATORY

Attributes for EthernetContainerFd\_Pac

Table 1: Attributes for EthernetContainerFd\_Pac

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| \_ethernetContainerFdCapability | EthernetContainerFdCapability  ./. | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |
| \_ethernetContainerFdConfiguration | EthernetContainerFdConfiguration  ./. | 1 | RW | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |
| \_ethernetContainerFdStatus | EthernetContainerFdStatus  ./. | 1 | R | OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA  OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY | See referenced class |

# Data Types

## AvailableQueueType

Applied Stereotypes:

Attributes for AvailableQueueType

Table 1: Attributes for AvailableQueueType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| queueName | QueueNameType  ./. | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Name of the queue. |
| supportedQueueDepthList | Integer  -1 | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: Byte * support: MANDATORY | Configurable values of the depth of the queue in Byte. The supportedQueueDepthList attribute must exclusively contain values, which are actually configurable at the hardware (except of the default value -1, in case buffer size cannot be configured at all). The values listed here might be all or a subset of values actually configurable at the hardware. To allow configuring the device according to its full capabilities, the values entered into the QueueBehaviorType::queueDepth attribute are not limited to the ones stated here. If a value, which is supported by the hardware, but not listed in the supportedQueueDepthList attribute, would be tried to be configured, the device-software or mediator-software shall successfully validate (and operate) it. |
| availableDroppingBehaviorKindList | DroppingBehaviorKindType  NOT\_YET\_DEFINED | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Lists the available types of behavior in case of congestions. |
| availableDropPrecedenceKindList | DropPrecedenceType  NOT\_YET\_DEFINED | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Explicit list (ALL not to be used here) of drop precedencies, which are available for this queue. |
| wredProfilePerDropPrecedenceIsAvailable | Boolean  false | 1 | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | true = Separate WRED profiles can be defined for every drop precedence. |
| availableSchedulingKindList | SchedulerKindType  NOT\_YET\_DEFINED | 0..\* | R | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Lists the available types of scheduling. |

## QueueBehaviorType

Applied Stereotypes:

Attributes for QueueBehaviorType

Table 1: Attributes for QueueBehaviorType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| queueName | QueueNameType  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Name of the queue. |
| queueDepth | Integer  -1 | 1 | RW | OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: Byte * support: MANDATORY | Only relevant if (supportedQueueDepthList != -1). Size of the queue in Byte. If a value, which is not supported by the hardware, would be tried to be configured, the device-software or mediator-software might either respond with operation failed and ...Configuration value out of range of hardware capabilities... or it could map the sent configuration value on the closest value, which is actually supported by the hardware. Configuration attempts with values lower than the minimum value or higher than the maximum value of the supportedQueueDepthList must be answered with the operation failed and ...Configuration value out of range of hardware capabilities... |
| droppingBehaviorKind | DroppingBehaviorKindType  NOT\_YET\_DEFINED | 1 | RW | OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Defines the behavior in case of congestions. |
| wredBehaviorList | wredBehaviorType  ./. | 0..\* | RW | OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Only relevant if (droppingBehaviorKind==WRED). |
| schedulerKind | SchedulerKindType  NOT\_YET\_DEFINED | 1 | RW | OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Type of scheduler to be used for this queue. |
| weighting | Integer  -1 | 1 | RW | OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_8\_BIT   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: % * support: MANDATORY | Only relevant if (schedulerKind==WFQ) OR (schedulerKind==DWRR) OR (schedulerKind==WRR). Serving rate for this weighted fair queueing queue as a percentage value. |

## wredBehaviorType

Applied Stereotypes:

Attributes for wredBehaviorType

Table 1: Attributes for wredBehaviorType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| affectedDropPrecedence | DropPrecedenceType  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Definition of the drop precedence, for which the WRED profile shall apply on. |
| affectedProtocol | ProtocolLayerType  ./. | 1 | RW | OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 2 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Definition of the kind of protocol, for which the WRED profile shall apply on. |
| \_wredProfile | Profile  ./. | 1 | RW | PassedByReference  OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA   OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY | Associates a WRED profile to the queue, respectively drop precedence. Attribute to point to an instance of Profile with profileName=='PROFILE\_NAME\_TYPE\_WRED\_PROFILE'. |

# Enumeration Types

## DropPrecedenceType

Contains Enumeration Literals:

* ALL:
  + If all drop precedence are affected. This includes the case of drop precedencies are not implemented.
* LOW:
  + Would be equal to GREEN.
* MEDIUM:
  + Would be equal to YELLOW.
* HIGH:
  + Would be equal to RED.
* NOT\_YET\_DEFINED:

## DroppingBehaviorKindType

Contains Enumeration Literals:

* DROP\_TAIL:
  + When the queue is filled to capacity, newly arriving packets are discarded until there is room in the queue to accept new traffic. Packets are not differentiated, i.e., all packets are treated identically.
* RED:
  + Queue management based on Random Early Detection (RED). RED drops packets based on a drop probability that is based on the average queue length, and settings of minimum and maximum queue thresholds. On ECN-capable devices, packets may be marked instead of dropped to signal congestion to the sender.
* WRED:
  + Queue management based on a variant of RED in which the packet drop probability is based on its traffic class.
* NOT\_YET\_DEFINED:

## FdStatusType

Current Status of the Forwarding Domain

Contains Enumeration Literals:

* UP:
  + Ready to pass packets.
* DOWN:
  + The interface does not pass any packets.
* TESTING:
  + In some test mode. No operational packets can be passed.
* UNKNOWN:
  + Status cannot be determined for some reason.
* DORMANT:
  + Waiting for some external event.
* NOT\_PRESENT:
  + Some component (typically hardware) is missing.
* LOWER\_LAYER\_DOWN:
  + Down due to state of lower-layer interface(s).
* ADMIN\_DOWN:
  + Down due to configuration.
* NOT\_YET\_DEFINED:

## LayerProtocolNameType

Contains Enumeration Literals:

* LAYER\_PROTOCOL\_NAME\_TYPE\_ETHERNET\_CONTAINER\_LAYER:

## ProtocolLayerType

Contains Enumeration Literals:

* NONE:
* ETHERNET\_MAC:
* VLAN:
* Q\_IN\_Q:
* MPLS:
* IPV4:
* IPV6:
* TCP:
* UDP:
* RTP:
* GTP\_U:
* OTHERS:
* NOT\_YET\_DEFINED:

## QueueNameType

Contains Enumeration Literals:

* BEST\_EFFORT\_QUEUE:
  + QueueNumber=0;
* ASSURED\_FORWARDING\_QUEUE1:
  + QueueNumber=1;
* ASSURED\_FORWARDING\_QUEUE2:
  + QueueNumber=2;
* ASSURED\_FORWARDING\_QUEUE3:
  + QueueNumber=3;
* ASSURED\_FORWARDING\_QUEUE4:
  + QueueNumber=4;
* EXPEDITED\_FORWARDING\_QUEUE:
  + QueueNumber=5;
* CLASS\_SELECTOR\_QUEUE6:
  + QueueNumber=6;
* CLASS\_SELECTOR\_QUEUE7:
  + QueueNumber=7;
* QUEUENAME\_NOT\_YET\_DEFINED:

## SchedulerKindType

Contains Enumeration Literals:

* STRICT:
  + Strict Priority
* WFQ:
  + Weighted-Fair-Queuing
* WRR:
  + Weighted Round Robin
* DWRR:
  + Deficit Weighted Round Robin
* NOT\_YET\_DEFINED:

# Primitive Types