

IEEE Std 802.1Q™-2014
Bridge Configuration Data and Status/State
UML Models

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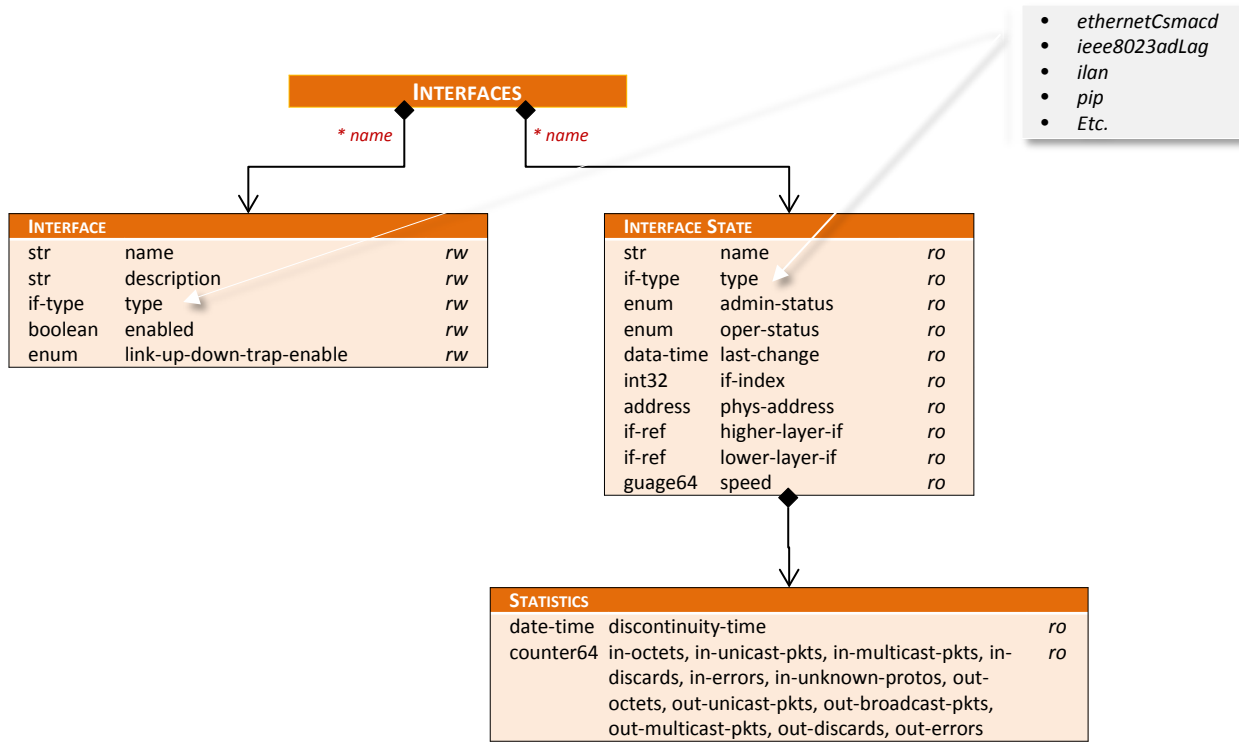
Introduction

- Introduce UML configuration data and state/status modeling of IEEE Std 802.1Q™-2014 Bridges
- IEEE 802.1Q Bridging modelled include:
 - TPMR (Two Port MAC Relay) Bridges
 - Customer VLAN Bridges
 - Provider Bridges
 - Provider Backbone Bridges
- IEEE 802.1Q features not (currently) being modelled include:
 - Bridge protocol entities (e.g., MST, etc.)
 - MRP and MMRP entities
 - CFM and DDCFM entities
 - PBB-TE entities
 - Shortest Path Bridging entities
 - Forwarding and queuing for time-sensitive stream entities
 - Congestion Notification entities
 - Stream Reservation Protocol (SRP) entities
 - Edge Virtual Bridge (EVB) entities
 - Edge Control Protocol (ECP) entities

Outstanding Model Areas

- Confirmation/validation that proposed model (structure) can gracefully accommodate
 - Link Aggregation (802.1AX)
 - CFM
 - 802.1X

IETF INTERFACES Model (RFC7223)

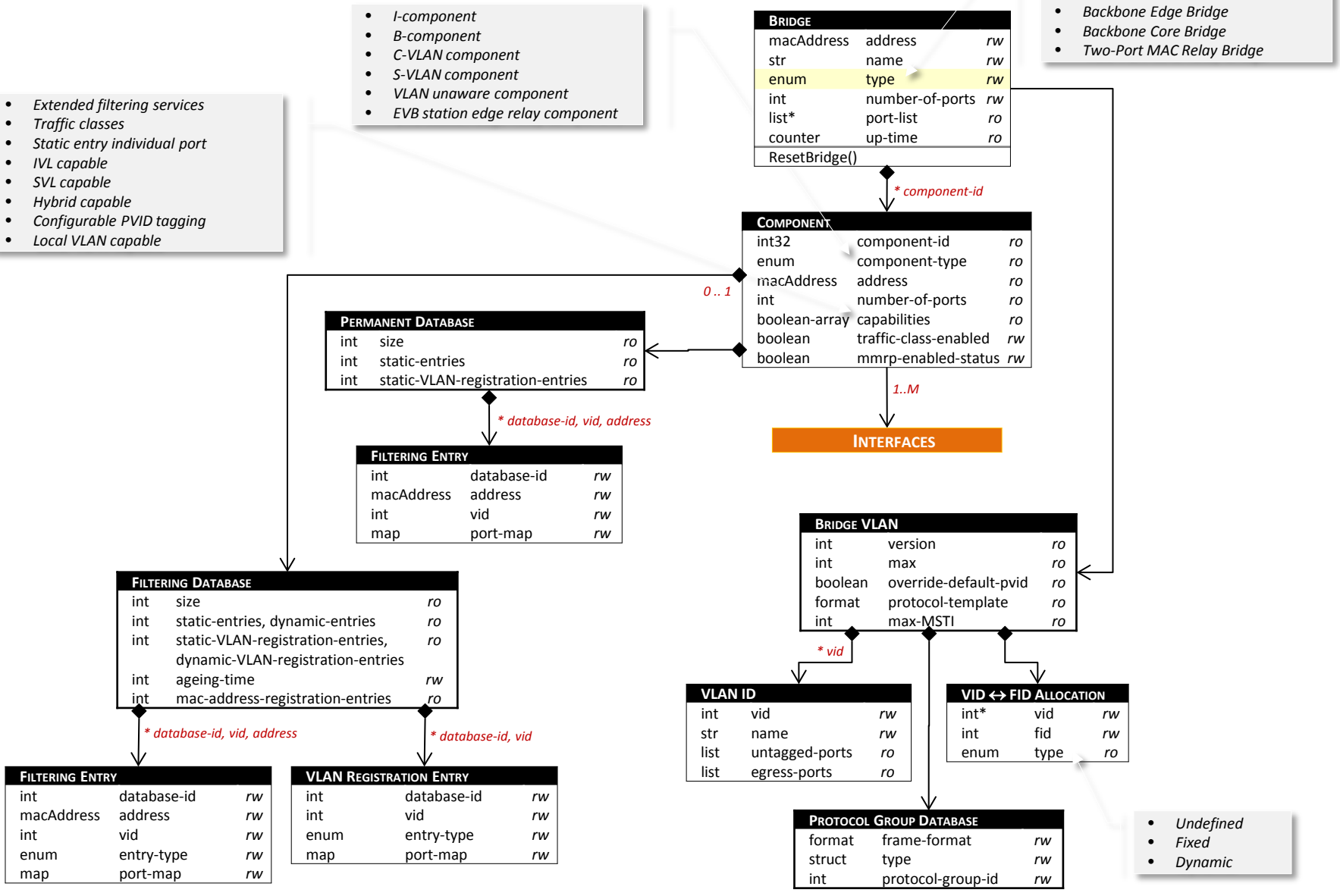


IEEE 802.1Q-2014 BRIDGE Model

- Extended filtering services
- Traffic classes
- Static entry individual port
- IVL capable
- SVL capable
- Hybrid capable
- Configurable PVID tagging
- Local VLAN capable

- I-component
- B-component
- C-VLAN component
- S-VLAN component
- VLAN unaware component
- EVB station edge relay component

- Customer VLAN Bridge
- Provider Bridge
- Provider Edge Bridge
- Backbone Edge Bridge
- Backbone Core Bridge
- Two-Port MAC Relay Bridge



- Undefined
- Fixed
- Dynamic

BRIDGE PORT Model

- BRIDGE PORT (representation) is an *extension* of the IETF INTERFACE definition

- 8P0D
- 7P1D
- 6P2D
- 5P3D

- C-VLAN Bridge port
- Provider Network Port (PNP)
- Customer Network Port (CNP)
- Customer Edge port (CEP)
- Customer Backbone Port (CBP)
- Virtual Instance Port (VIP)
- Provider Instance Port (PIP)
- D-Bridge Port
- Remote Customer Access Port (RCAP)
- Station-facing Bridge Port (SBP)
- Uplink Access Port (UAP)
- Uplink Relay Port (URP)

INTERFACES

INTERFACE		
str	name	rw
str	description	rw
if-type	type	rw
boolean	enabled	rw
enum	link-up-down-trap-enable	rw
BRIDGE PORT		
boolean	port-and-protocol-based-VLAN	rw
int	pvid	rw
int	default-priority	rw
table	priority-regeneration-table	rw
enum	pcp-selection	rw
table	pcp-decoding-table	rw
table	pcp-encoding-table	rw
boolean	use-dei	rw
boolean	drop-encoding	rw
enum	service-access-priority-selection	rw
table	service-access-priority-table	rw
table	traffic-class-table	rw
enum	acceptable-frame	rw
boolean	enable-ingress-filtering	rw
boolean	restricted-vlan-registration	rw
boolean	VID-translation-table	rw
boolean	egress-VID-translation-table	rw
int	protocol-group-id	rw
struct	protocol-group-database-contents	rw
uint	admin-point-to-point	rw

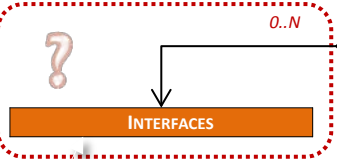
INTERFACE STATE		
str	name	ro
if-type	type	ro
enum	admin-status	ro
enum	oper-status	ro
data-time	last-change	ro
int32	if-index	ro
address	phys-address	ro
if-ref	higher-layer-if	ro
if-ref	lower-layer-if	ro
guage64	speed	ro
BRIDGE PORT		
int	number	ro
int32	component-id	ro
enum	type	ro
macAddress	address	ro
uint	capabilities	ro
uint	type-capabilities	ro
boolean	external	ro
boolean	oper-point-to-point	ro

STATISTICS		
date-time	discontinuity-time	ro
counter64	in-octets, in-unicast-pkts, in-multicast-pkts, in-discards, in-errors, in-unknown-protos, out-octets, out-unicast-pkts, out-broadcast-pkts, out-multicast-pkts, out-discards, out-errors	ro
BRIDGE PORT		
counter	delay-exceeded-discards, mtu-exceeded-discards	ro
counter	frameRx, octetsRx, discardInbound, forwardOutbound, discardLackOfBuffers, discardTransitDelayExceeded, discardOnError, discardOnIngressFiltering, discardTTLExpired	ro

VID TRANSLATIONS		
int	local-vid	rw
int	relay-vid	rw

EGRESS VID TRANSLATIONS		
int	relay-vid	rw
int	local-vid	rw

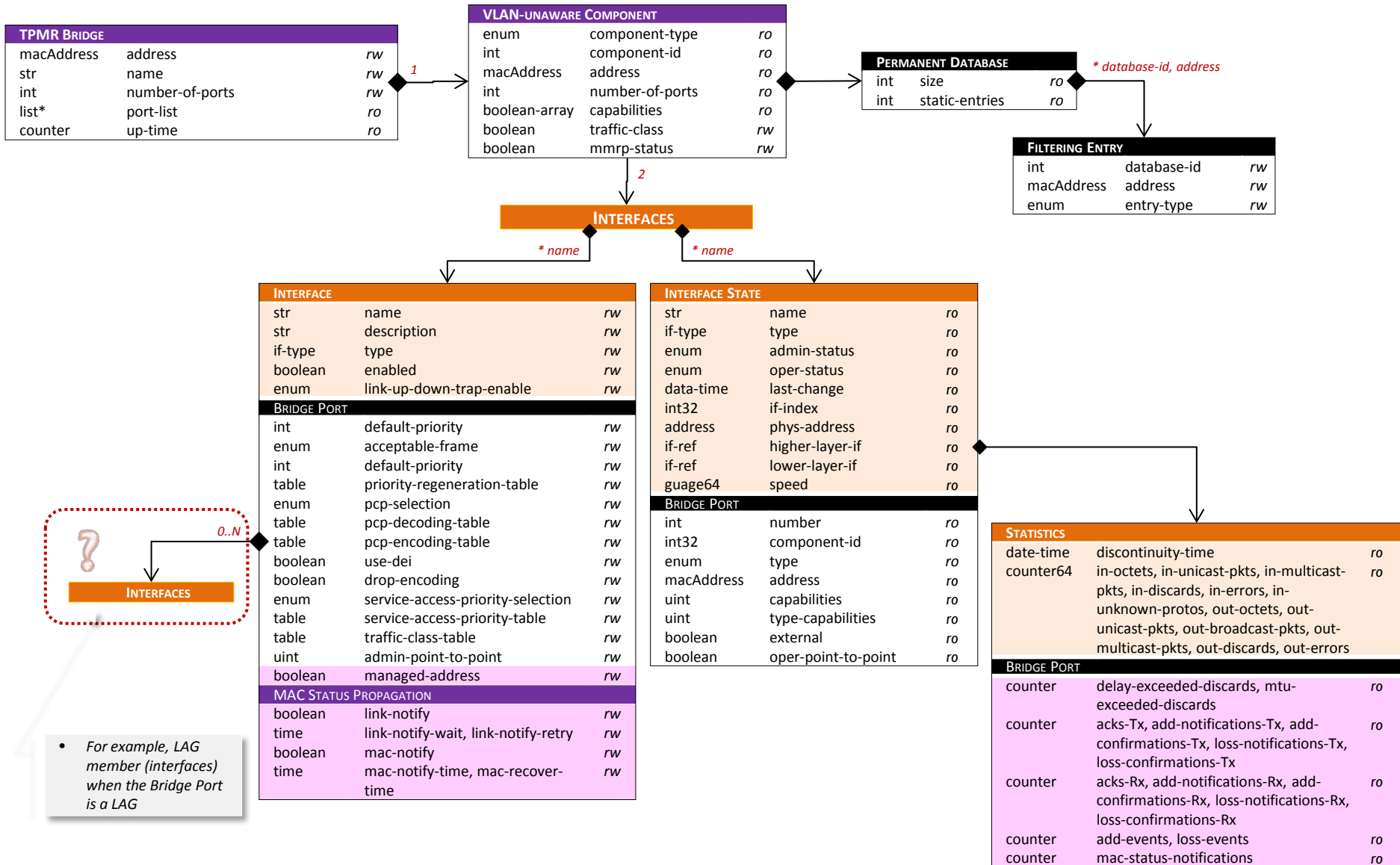
STATISTICS		
BRIDGE PORT		
counter	frameRx, octetsRx, discardInbound, forwardOutbound, discardLackOfBuffers, discardTransitDelayExceeded, discardOnError, discardOnIngressFiltering, discardTTLExpired	ro



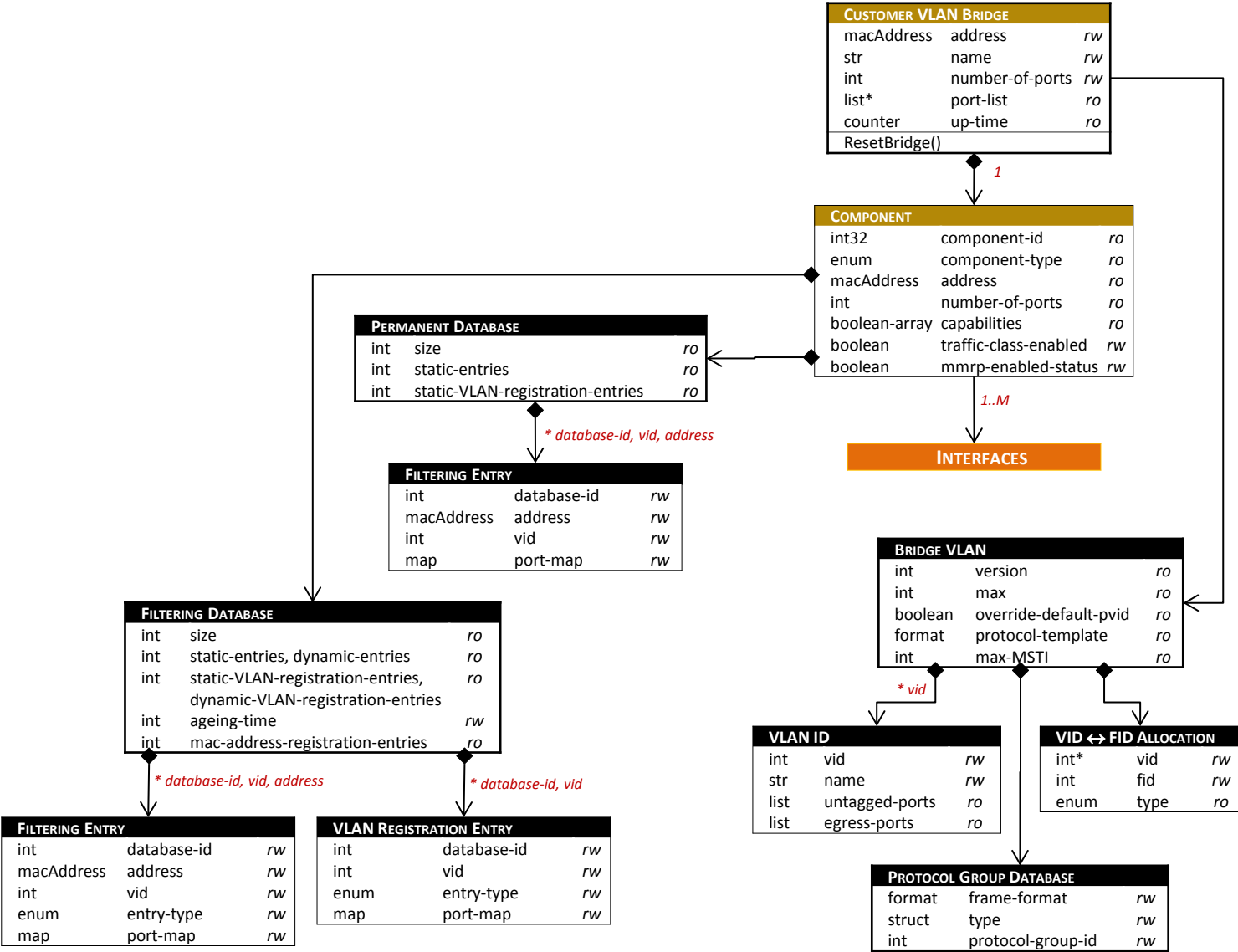
For example, LAG members (interfaces) when the Bridge Port is a LAG

- Admit only VLAN-tagged frames
- Admit only Untagged and Priority Tagged frames
- Admit All frames

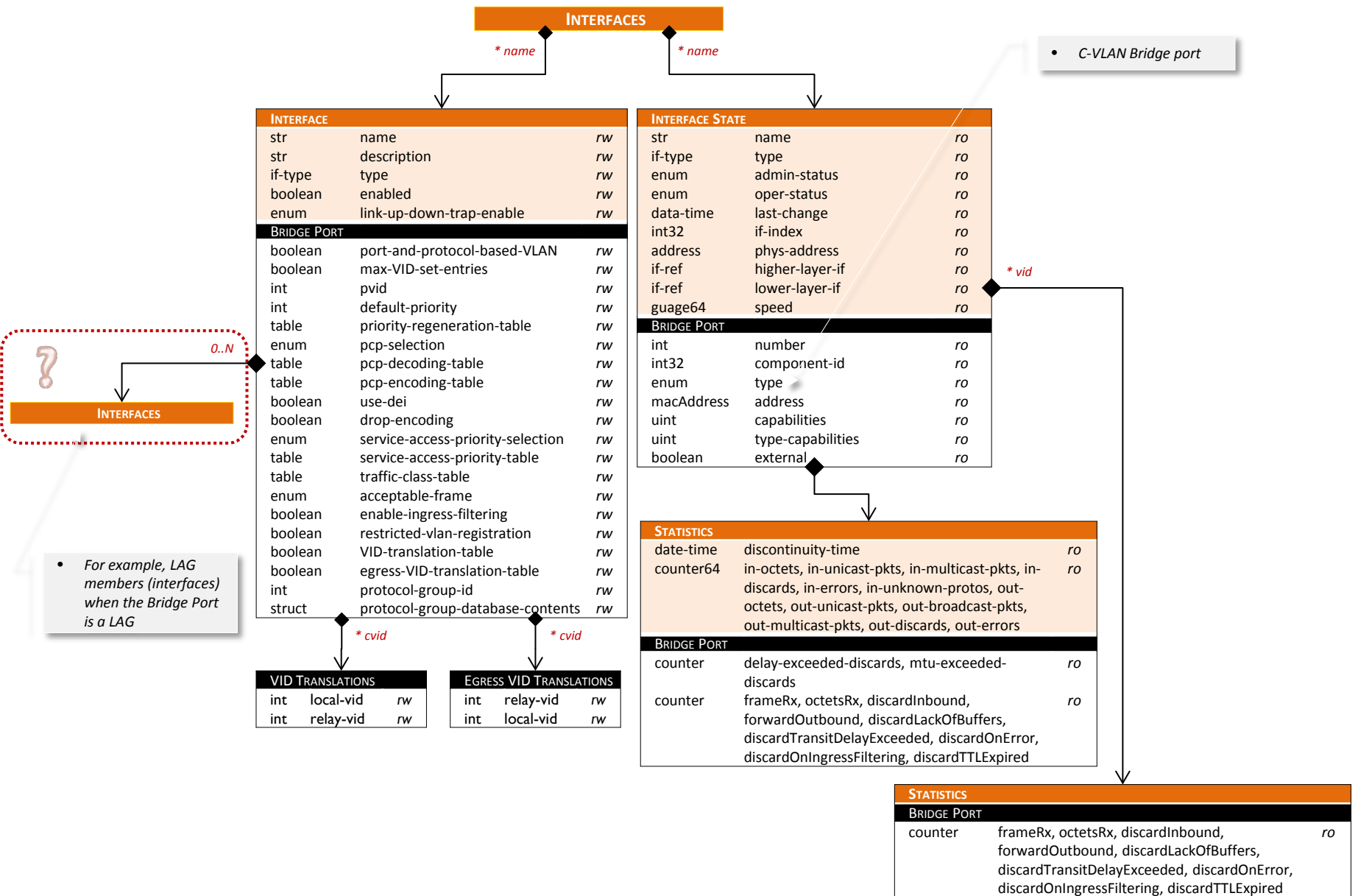
TPMR BRIDGE Model



CUSTOMER VLAN BRIDGE Model



CUSTOMER VLAN BRIDGE COMPONENT INTERFACE Model



- C-VLAN Bridge port

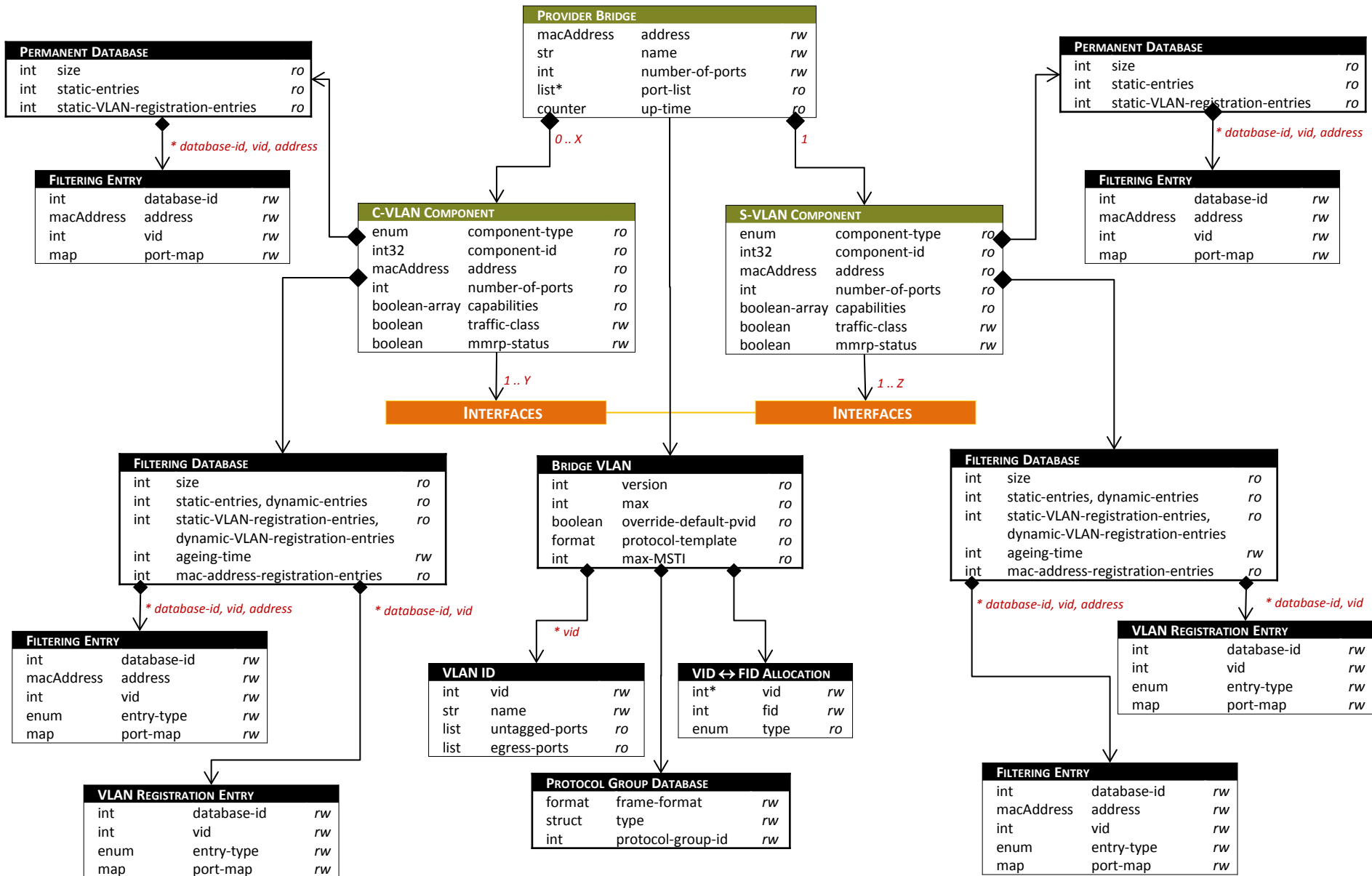
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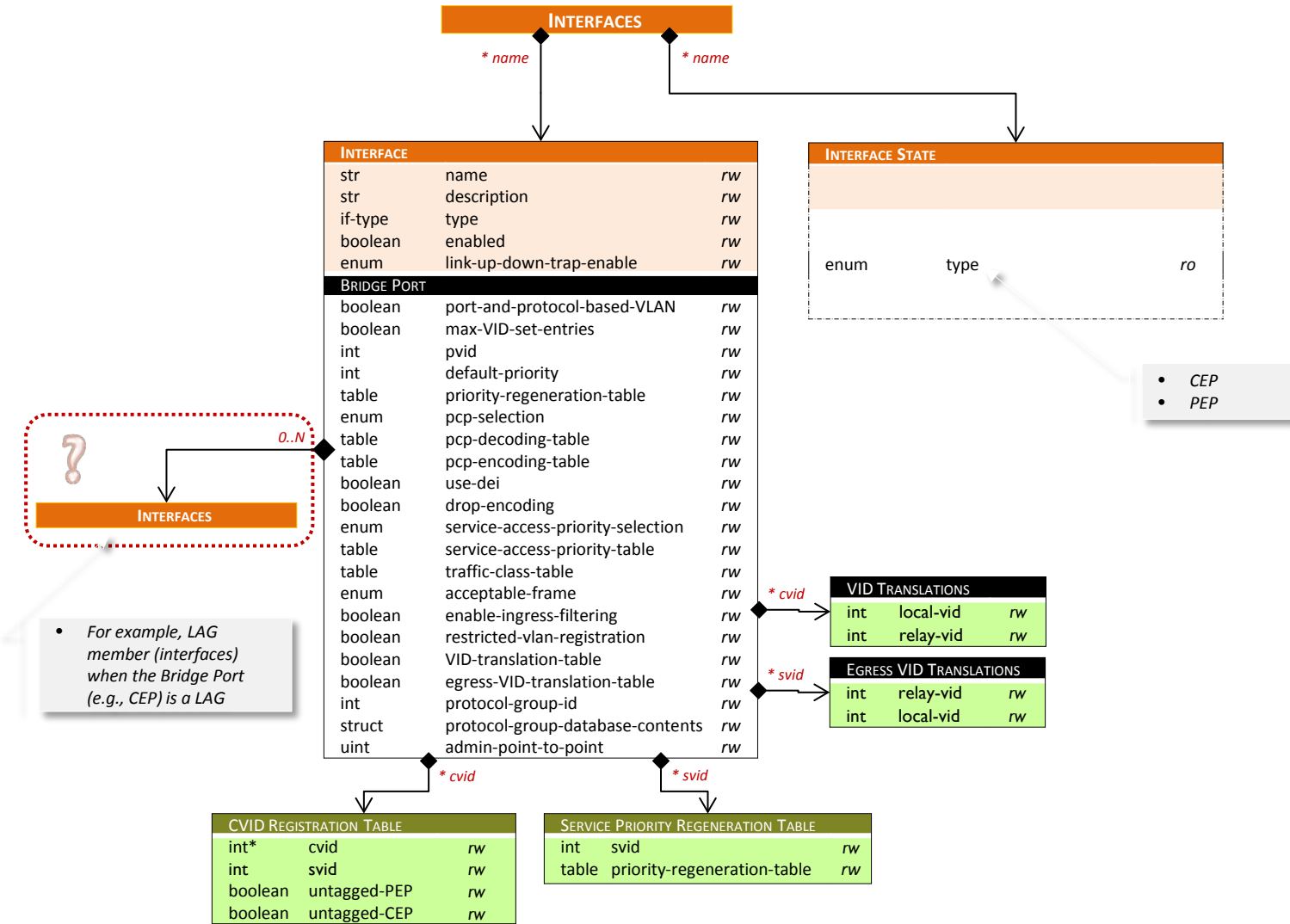
INTERFACES

- For example, LAG members (interfaces) when the Bridge Port is a LAG

PROVIDER BRIDGE Model

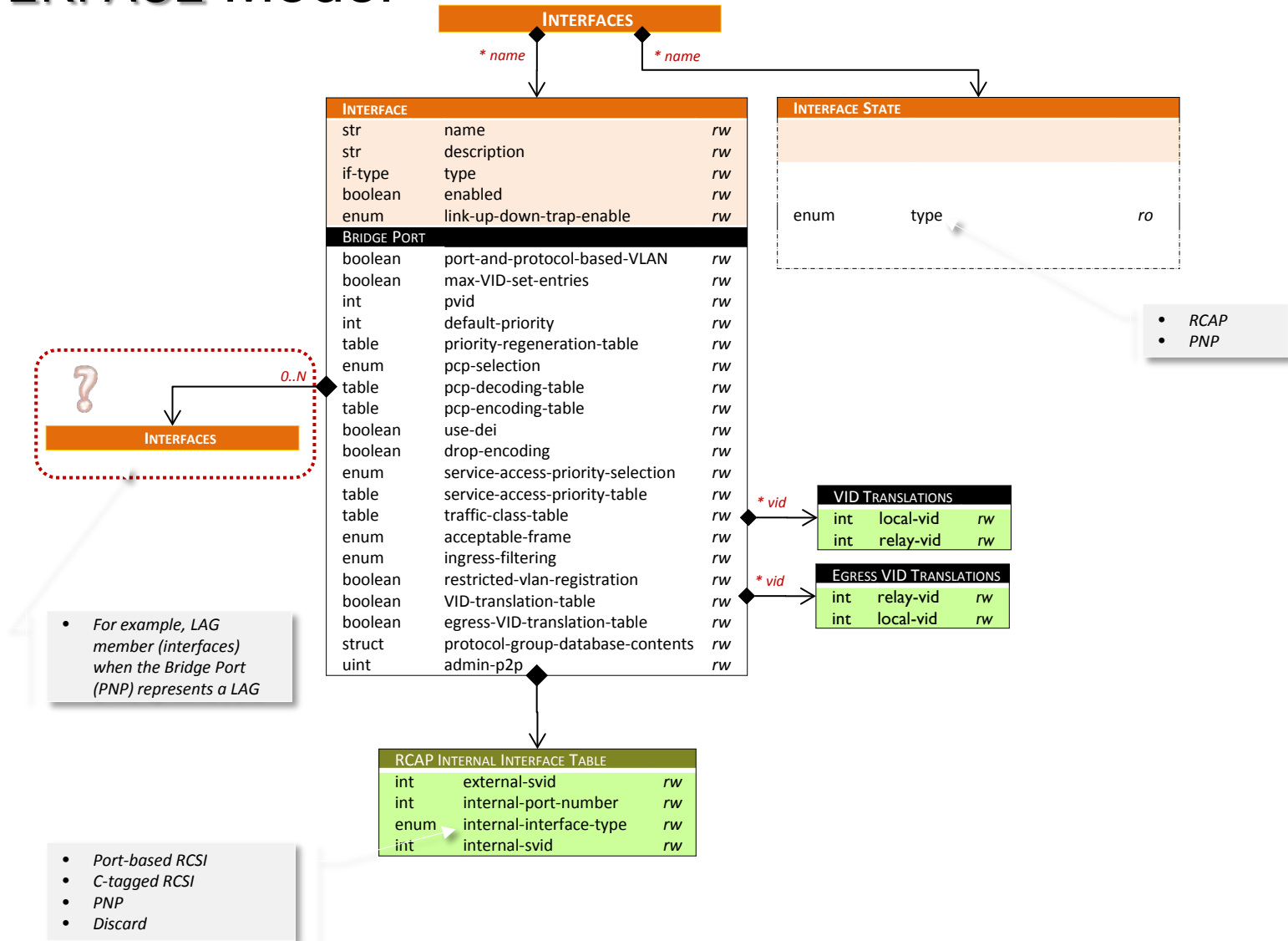


PROVIDER EDGE BRIDGE C-VLAN COMPONENT INTERFACE Model



PROVIDER BRIDGE S-VLAN COMPONENT

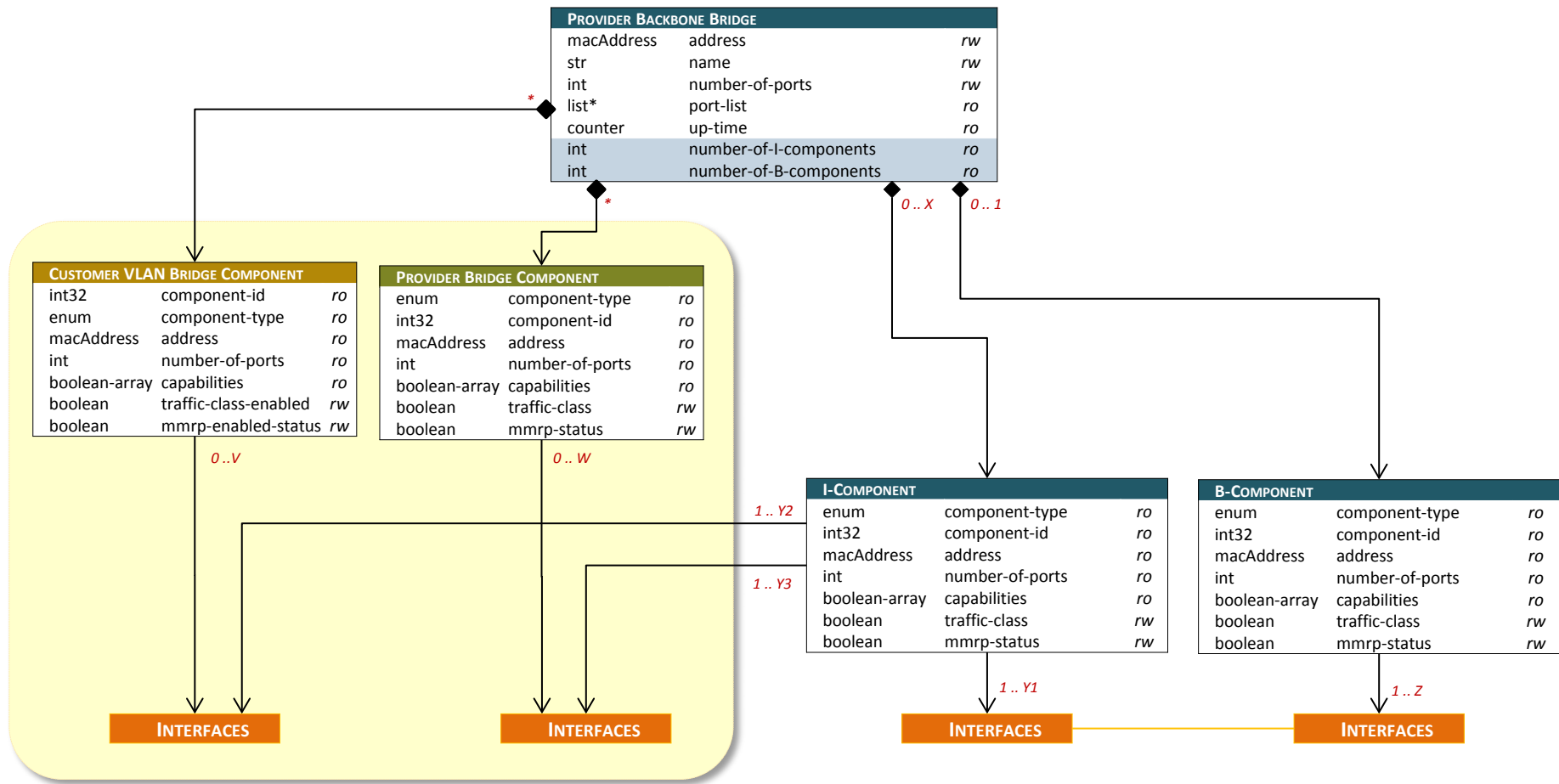
INTERFACE Model



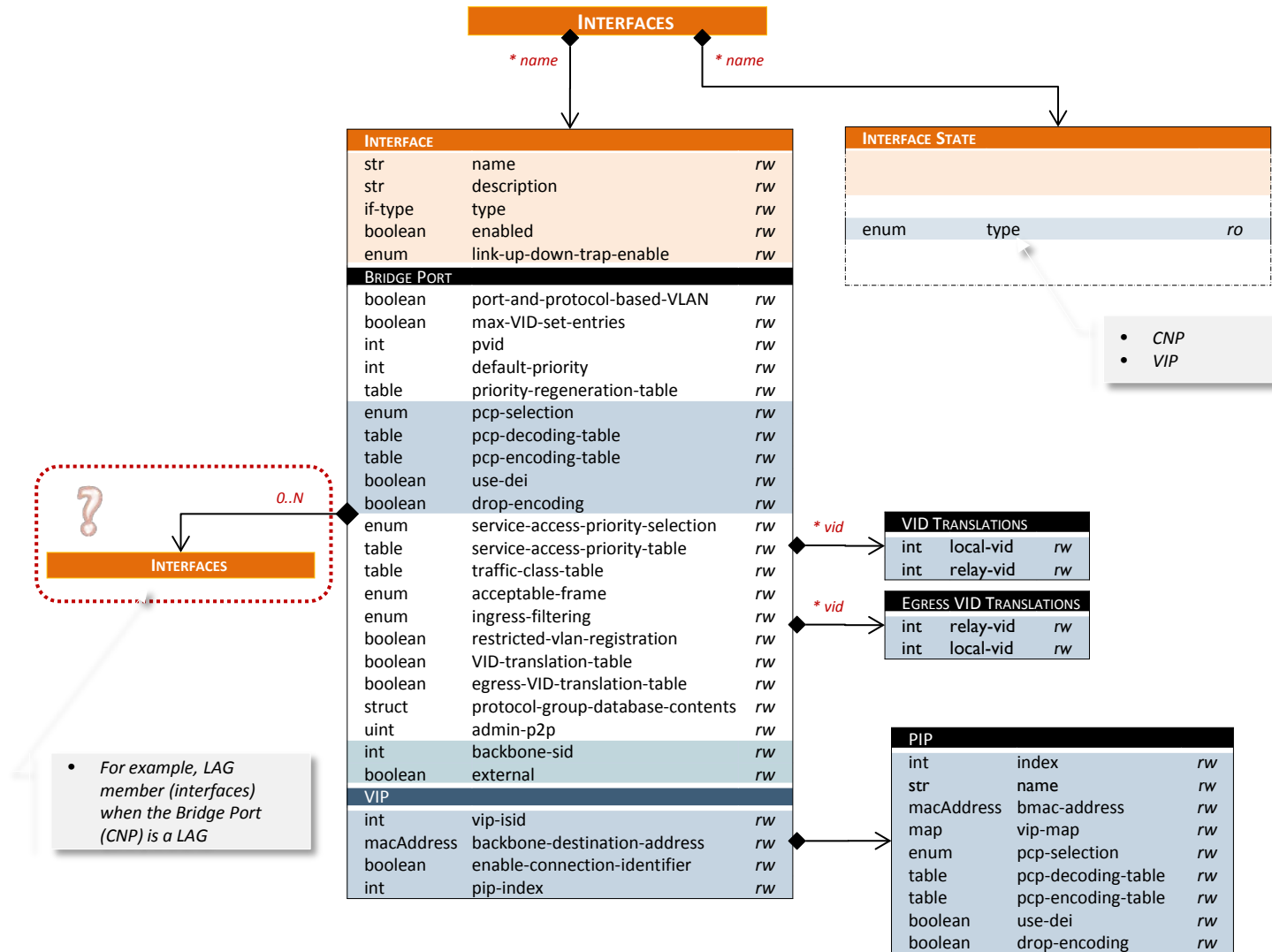
Backup Material

- Provider Backbone Bridge Models

PROVIDER BACKBONE BRIDGE Model



BACKBONE EDGE BRIDGE I-COMPONENT INTERFACE Model



BACKBONE BRIDGE B-COMPONENT INTERFACE Model

