

802.1Qbg

Bridge management

Clause 12

V7

November 2, 2010

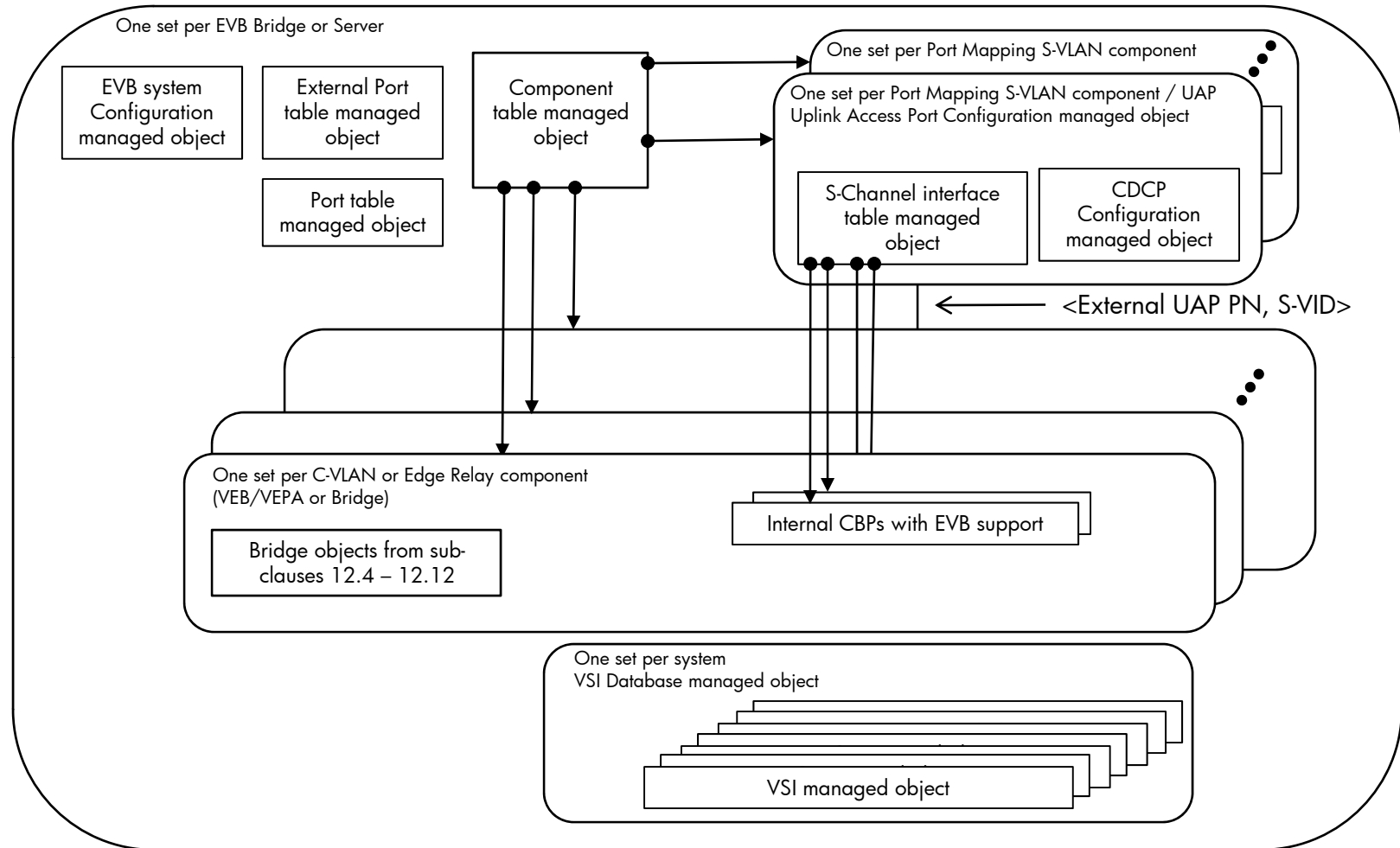
IEEE 802.1Qbg Management

- Need to complete 802.1Qbg clause 12, 17 and K.10
 - Clause 12 information model objects
 - Clause 17 Bridge SNMP MIB
 - Clause K.10 IEEE 802.1AB SNMP MIB 802.1 TLV extensions
- Clause 12 object extensions required
 - A root object for each EVB station/bridge
 - System wide parameters including default for ECP/VDP
 - External Port Table
 - Object for Uplink Access Port
 - Objects for each CDCP state machines
 - Objects for the S-Channel database
 - Objects for the ECP state machines
 - Objects for the VDP state machines
 - Objects for the VSI database

Some Terminology

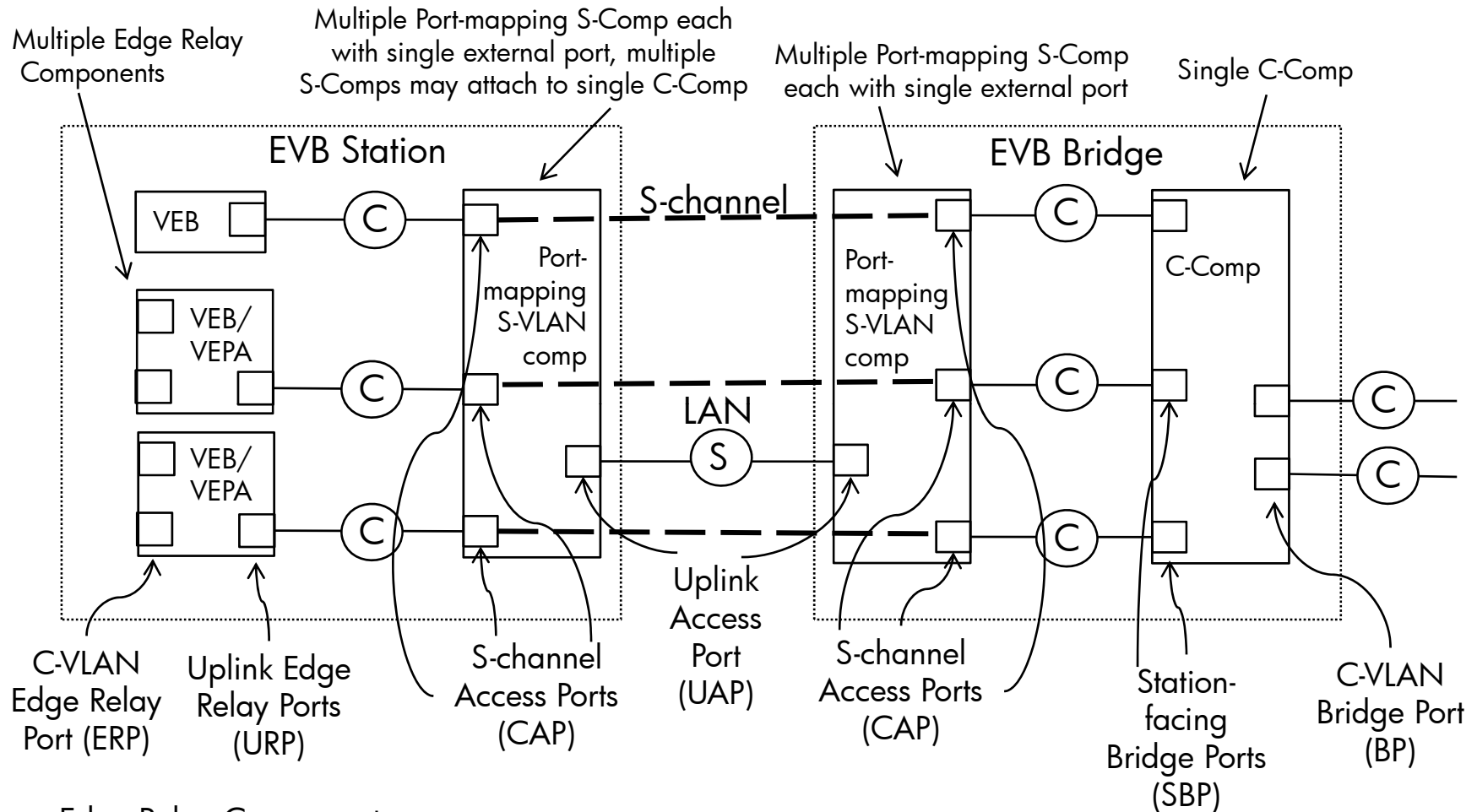
- Edge Virtual Bridging Station: The system containing V-LAN aware Edge Relays
- Edge Virtual Bridging Controlling Bridge: The system containing a single C-VLAN component which is the device attaching directly to an EVB Server.

Relationships among EVB objects



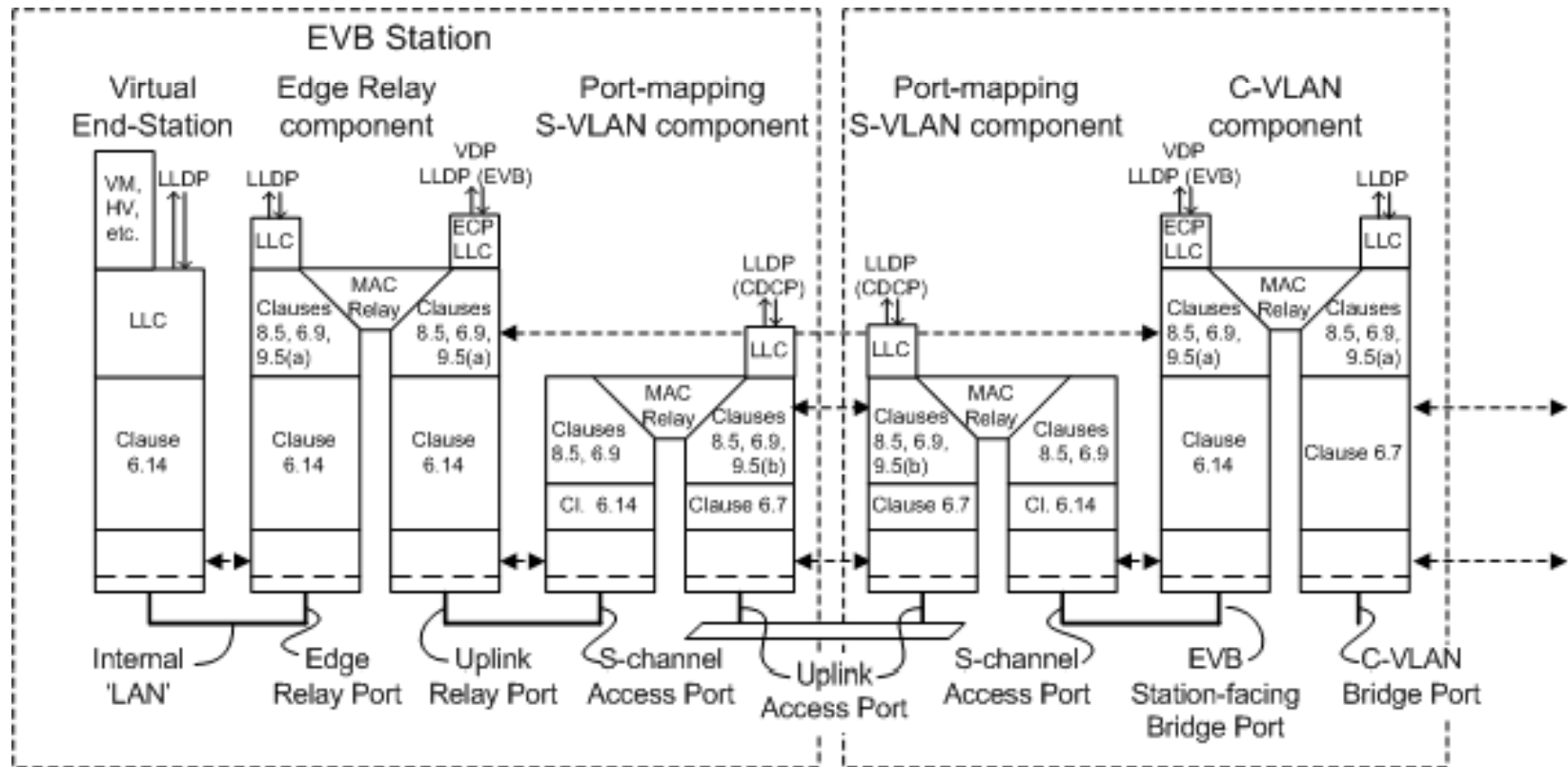
- The EVB Bridge has only a single C-VLAN component
- If no port-mapping S-VLAN components then default S-channel is still present for EVB configuration
- VEB/VEPA are C-comp component types

EVB Components and Ports:



- Edge Relay Component
- UAP is a Port-mapping S-VLAN comp RCAP with added support for CDCP
- CAP is a Port-mapping S-VLAN comp PAP with added support for attaching an internal LAN with EVB LLDP, ECP, and VDP
- C-VLAN Bridge Port is a generic C-VLAN aware Bridge Port (reduced in the edge relay case)

Baggy Pants Diagram



- LLDP at 4 internal places with different databases

EVB System managed objects

- Root structure for entire EVB system provides defaults for ECP/VDP
- Root external port structure for EVB system provides an entry per external port.
 - Table entries for every available system port
 - Default condition for Bridge is each external port is mapped to a BP of the C-Comp
 - Default condition for Station is each external port is mapped to a UAP of an S-Comp
 - Each port is indexed by a Port Number
 - Each entry provides a mapping to the associated internal Port
 - Each Bridge external port is capable of being a UAP or a BP
 - Each Station external port is capable of being a UAP
- Port-mapping S-VLAN components referenced by external Port Number
- S-Channels referenced by <external Port Number, SVID>
 - Objects provide mapping to CAP <ComponentID, Port Number>
 - Objects provide mapping to SBP <ComponentID, Port Number>
 - For default S-Channel the external Port Number = Port Number of SBP on C-Comp

EVB System Base Table

Name	Data type	Operations supported ^a	Conformance ^b	References
evbSysMACAddress	MAC Address	R	BE	12.24
evbSysName	string (0..32)	RW	BE	12,24
evbSysNumExternalPorts	unsigned (1-4095)	R	BE	12.24
evbSysType	enumeration (1..2)	R	BE	5.19, 5.21
evbSysNumCorErComps	unsigned	R	BE	5.19, 5.21
evbSysNumSComps	unsigned	R	BE	5.19, 5.21
evbSysEvbLldpEnables	Boolean array 2	RW	BE	D.2.8, 41
evbSysEvbLldpDfltMode	Boolean array 16	RW	BE	D.2.8, 41
evbSysEvbLldpNumVsisSup	Unsigned 16b	RW	BE	D.2.8, 41
evbSysEvbLldpDfltNumVsisCfg	Unsigned 16b	RW	BE	D.2.8, 41
evbSysEcpDfltAckTimerInit	timer exp	RW	BE	D.2.8, 44.3.7.1
evbSysEcpDfltMaxRetries	unsigned (0-7)	RW	BE	D.2.8, 44.3.7.6
evbSysVdpDfltRsrcWaitDelay	timer exp	RW	BE	D.2.8, 42.2.6.8
evbSysVdpDfltReinitKeepAlive	timer exp	RW	BE	D.2.8, 42.2.6.7

EVB System Parameter Defaults

System Parameter	Default Value	S-Channel Parameter
evbSysName	12 Octet Hex in ASCII String for the evbSysMACAddress	N/A
evbSysEvbLldpEnables	Enable EVB LLDP, Disable Manual Operation	schLldpAdminEnables
evbSysEvbLldpDfltMode	Enable STD, RR, RTE, ECP, VDP	schLldpAdminMode
evbSysEvbLldpNumVsisSup	System Dependent	N/A
evbSysEvbLldpDfltNumVsisCfg	evbSysEvbLldpNumVsisSup	schLldpAdminNumVsisCfg
evbSysEcpDfltAckTimerInit	14, for 164 milliseconds	schEcpAdminAckTimerInit
evbSysEcpDfltMaxRetries	3	schEcpAdminMaxRetries
evbSysVdpDfltRsrcWaitDelay	20, for 10.5 seconds	schVdpAdminRsrcWaitDelay
evbSysVdpDfltReinitKeepAlive	20, for 10.5 seconds	schVdpAdminReinitKeepAlive

Name	Data type	Operations supported	Conformance	References
phyPortNumber	port number	R	BE	12.4
phyPortMACAddress	MAC Address	R	BE	12.4.1.1.3a
phyPortTypeCapabilities	boolean array	R	BE	12.4
phyPortType	enumerated	RW	BE	12.4
phyToComponentID	ComponentID	R	BE	12.4
phyToInternalPortNumber	Port Number	R	BE	12.4

VSI Database

Name	Data type	Operations supported	Conformance	References
evbVsiUapExtnPortNumber	port number	R	BE	12.24
evbVsiSvid	unsigned 1-4095	R	BE	12.24
evbVsiID	string 16	R	BE	42.2.2.7
evbVsiComponentId	componentID	R	BE	12.24.2
evbVsiPortNumber	port number	R	BE	12.24.2
evbVsiTimeSinceCreate	time interval	R	BE	42
evbVsiVdpOperCmd	enumerated (1..4)	R	BE	42.2.2.1
evbVsiOperRevert	Boolean	R	BE	42.2.2.2
evbVsiOperHard	Boolean	R	BE	42.2.2.2
evbVsiOperReason	Unsigned (0..15)	R	BE	42.2.2.2
evbVsiMgrID	String 1	R	BE	42.2.2.3
evbVsiType	String 3	R	BE	42.2.2.4
evbVsiTypeVersion	String 1	R	BE	42.2.2.5
evbVsiMvFormat	String 1	R	BE	42.2.2.7
evbVsiNumMACs	Unsigned	R	BE	42.2.2.8
evbVsiMachineState	Unsigned	R	BE	42.2.6.16
evbVsiCmdsSucceeded	counter	R	BE	42.2.6
evbVsiCmdsFailed	counter	R	BE	42.2.6
evbVsiCmdsReverts	counter	R	BE	42.2.6

VSI Database: MAC/VID/GroupID

Name	Data type	Operations supported	Conformance	References
evbMvUapExtnPortNumber	port number	R	BE	12.24
evbMvSvid	unsigned 1-4095	R	BE	12.24
evbMvVsiID	string 16	R	BE	42.2.2.7
evbMvGroupID	Unsigned (24bits)	R	BE	42.2.2.8
evbMvVsiVID	Unsigned (1..4095)	R	BE	42.2.2.8
evbMvVsiMAC	MAC Address	R	BE	42.2.2.8

Uplink Access Port table

Name	Data type	Operations supported ^a	Conformance ^b	References
uapExtnPortNumber	Port number	R	BE	12.24
uapComponentID	ComponentID	R	BE	12.24
uapInternalPortNumber	Port number	R	BE	12.24
uapSchCdcAdminEnable	boolean 2	RW	BE	43.1.5.4
uapSchCdcAdminRole	enumerated 2	RW	BE	43.1.5.2
uapSchCdcAdminChnCap	Unsigned 1-276	RW	BE	43.1.5.1
uapSchCdcOperChnCap	Unsigned 1-276	R	BE	43.1.5.10
uapSchAdminCdcSvidPoolLow	Unsigned 0,2-4095	RW	BE	43.1.5.9
uapSchAdminCdcSvidPoolHigh	Unsigned 0,2-4095	RW	BE	43.1.5.9
uapSchOperState	Enumerated 2	R	BE	43.1.5.18
uapSchCdcRemoteEnabled	Boolean 1	R	BE	43.1.5.17
uapSchCdcRemoteRole	Enumerated 2	R	BE	43.1.5.15

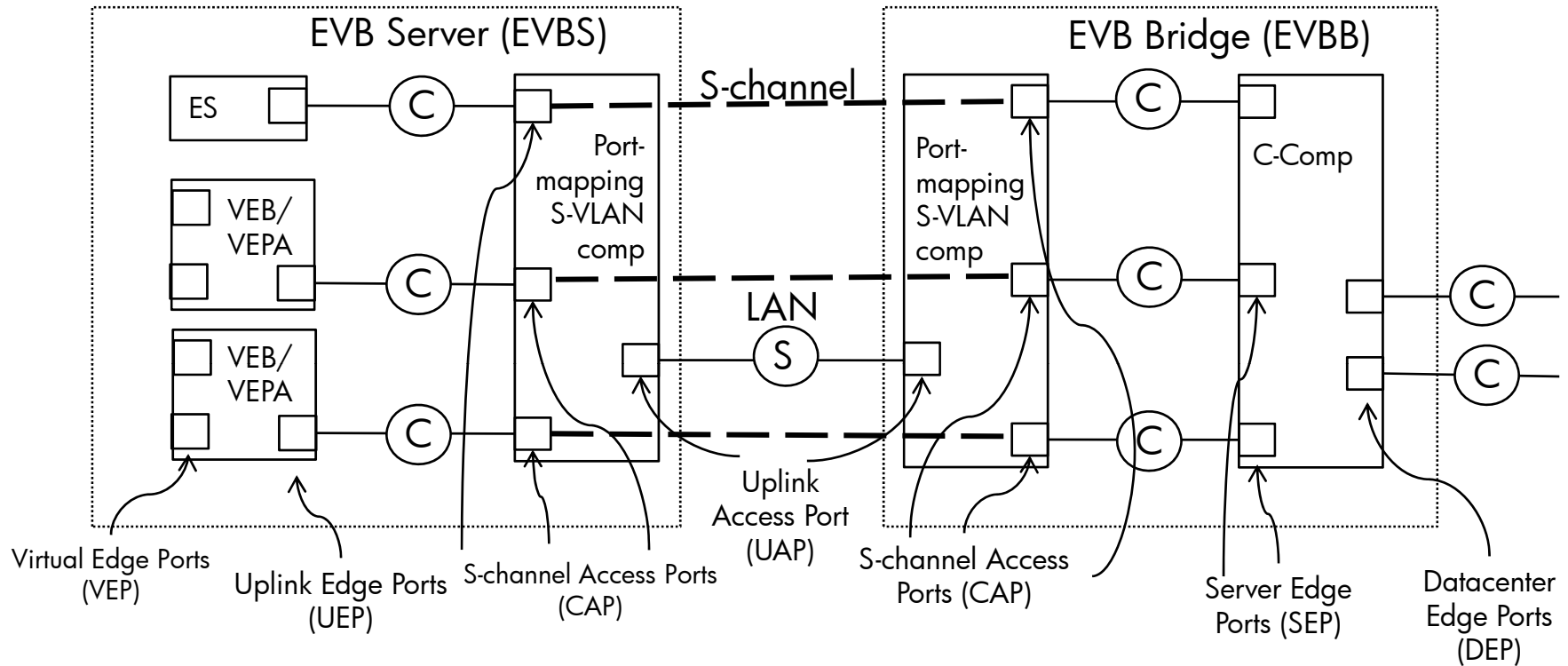
UAP Table Name	Default Values
uapSchCdcAdminEnable	Enable CDCP TLV Disable manual operation
uapSchCdcAdminRole	'S' if EVBS and 'B' if EVBB
uapSchCdcAdminChnCap	1
uapSchAdminCdcSvidPoolLow	0
apSchAdminCdcSvidPoolHigh	0

S-Channel Interface Table

Name	Data type	Operations supported ^a	Conformance ^b	References
schUapExtnPortNumber	port number	R	BE	12.24
schSvid	unsigned 1-4095	R	BE	12.24
schComponentID	componentID	R	BE	12.24
schCapPortNumber	port number	R	BE	12.24
schScid	unsigned 1-4095	R	BE	43.1.5.2
schSbpCompentID	componentID	R	BE	
schSbpPortNumber	Port number	R	BE	
schLldpAdminEnables	Boolean array 2	RW	BE	D.2.8, 41
schLldpAdminMode	Boolean array 16	RW	BE	D.2.8, 41
schLldpOperMode	Boolean array 16	R	BE	D.2.8, 41
schLldpAdminVsisCfg	Unsigned 16b	RW	BE	D.2.8, 41
schEcpAdminStatus	Enumerated (0-2)	RW	BE	44
schEcpOperStatus	booean	R	BE	44
schEcpAdminAckTimerInit	timer exp	RW	BE	D.2.8, 44.3.7.1
schEcpOperAckTimerInit	timer exp	R	BE	D.2.8, 44.3.7.1
schEcpAdminMaxTries	unsigned (0-16)	RW	BE	D.2.8, 44.3.7.6
schEcpOperMaxRetries	unsigned (0-15)	R	BE	D.2.8, 44.3.7.6
schEcpTxFrameCount	counter	R	BE	44
schEcpTxRetryCount	counter	R	BE	44
schEcpTxFailures	counter	R	BE	44
schEcpRxFrameCount	counter	R	BE	44
schVdpAdminStatus	Unsigned (0-2)	RW	BE	42
schVdpOperStatus	boolean	R	BE	42
schVdpOperRsrcWaitDelay	timer exp	RW	BE	D.2.8, 42.2.6.8
schVdpOperRespWaitDelay	MRP Timeout	R	E	D.2.8, 42.2.6.10
schVdpOperReinitKeepAlive	timer exp	RW	BE	D.2.8, 42.2.6.7
schVdpOperToutKeepAlive	MRP Timeout	R	B	D.2.8, 42.2.6.14

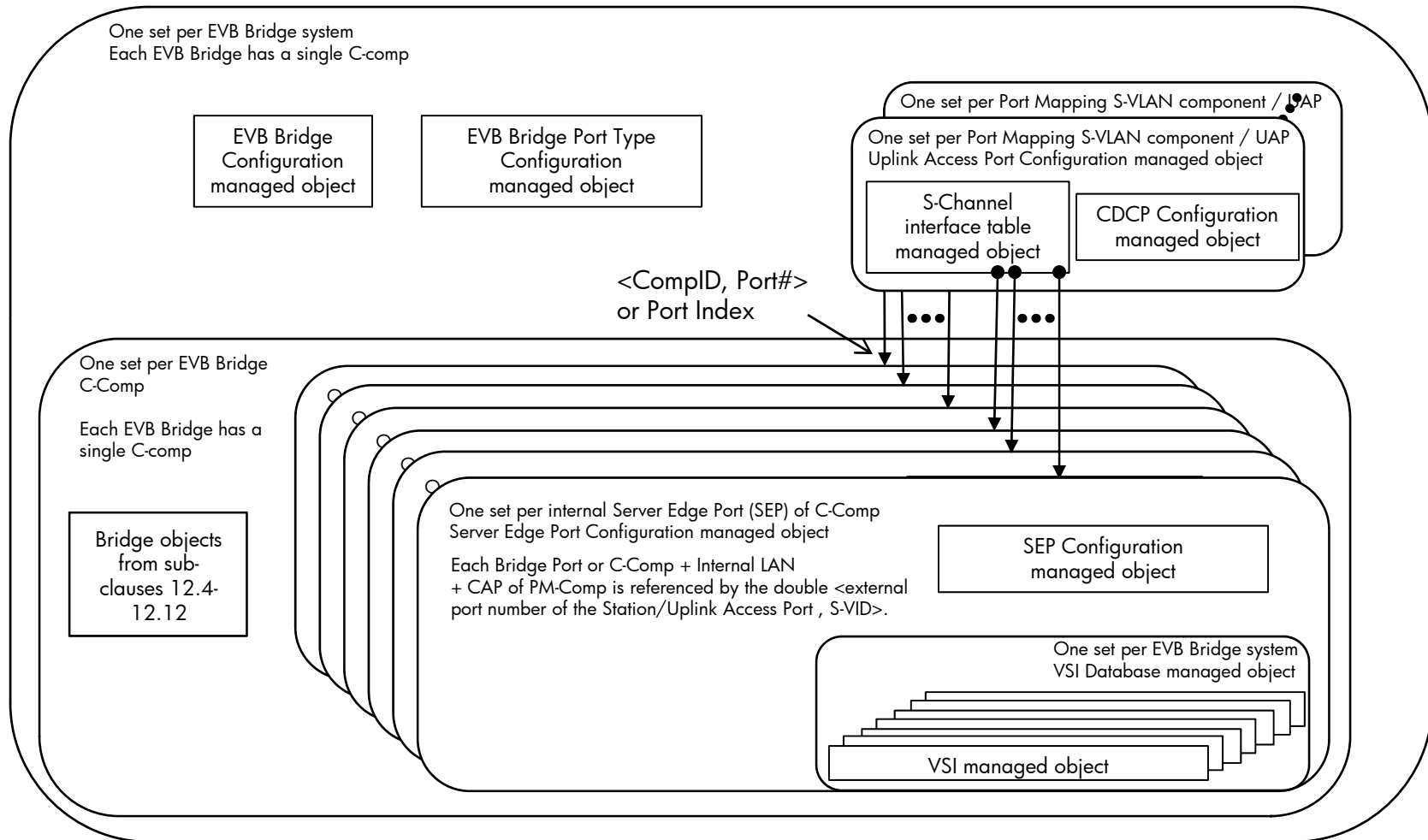
BACKUP SLIDES

Some New(and old) Port Names:



- Every port (internal or external) is referenced by the double <ComponentID, PortID>
- When the ComponentID is unspecified it is assumed to be the default componentID = 1
- Two types of external BPs exist UAPs and DEPs.
- Internal BPs are VEP, UEP, SEP and DEP.

Relationships among EVB Bridge objects



802.1Qbg CDCP Machine objects

- AdminRole: The role may take the value 'S' or 'B'.
- AdminVersion: May take the value 0x00 = disable S-channels or 0x10 = enable S-channels
- AdminChnCap: May take a value from 0 to xxx
- schState: May take the state RUNNING or NOTRUNNING
- S-Channel table: <SCID, VID, cap-port#, c-comp#, c-port#> pairs
AdminSVIDWants is derived from this table. The table size is AdminChnCap.
Entries with SCID = 0 are not requested. Entries with VID non-zero are active channels.
- Subclause 12.1.1 add after g)
 - The ability to create and delete the functional elements of CDCP and to control their operation.
- Subclause 12.2 add after j)
 - Additional objects to support CDCP protocols (12.23 and 42)
 - Additional objects to support EVB functions and the ECP and VDP protocols (12.24 and 41)

802.1Qbg VDP Machine objects

- Subclause 12.23 ? Need a number assigned
- VDP objects: One set per station
 - Station Objects (one set) New annex for station MIB? Let DMTF do station MIB? Bridge MIB in vSwitch?
 - Command response timeout
 - Keep Alive interval
 - Keep Alive response timeout
 - Bridge Objects (one set per station)
 - Resource timeout
 - Keep Alive command timeout
- ECP objects: One set per ECP instance (per S-channel)
 - ackTimer
 - TxFrame Count – Successful – Read Only - 64 bits
 - TxRetry Count – Total – Read Only – 64 bits
 - TxFailures – Total – Read Only – 64 bits
 - RxFrame Count – Successful – Read Only – 64 bits
- CDCP objects: once set per CDCP instance
 - CID table
 - S-channel state
 - S-channel VID
 - Reserve Pool of VIDs

VDP Timers

- 4 Timers Drive State Machines
 - Server: respWaitDelay and reinitKeepAlive
 - Bridge: resourceWaitDelay and toutKeepAlive
- The reinitKeepAlive and resourceWaitDelay should be exchanged in the EVB TLV
- The respWaitDelay is a function of resourceWaitDelay, ECP reXmit, and ECP maxRetry
- The toutKeepAlive is a function of the reinitKeepAlive, ECP reXmit, and ECP maxRetry