802.1Qbg
Bridge management
Clause 12

V7

November 2, 2010

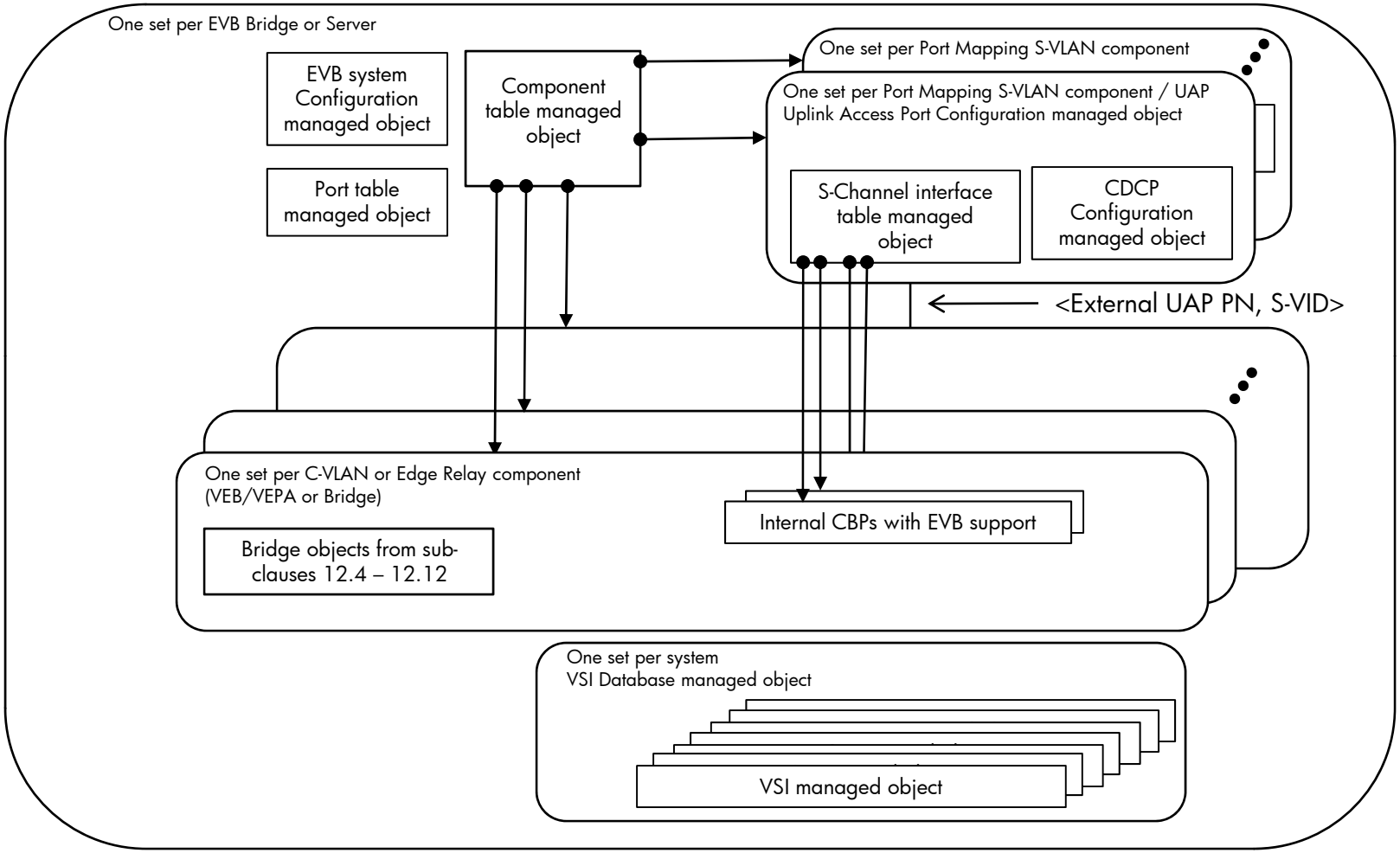
IEEE 802.1Qbg Management

- 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
    - IEEE8021-
  - 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

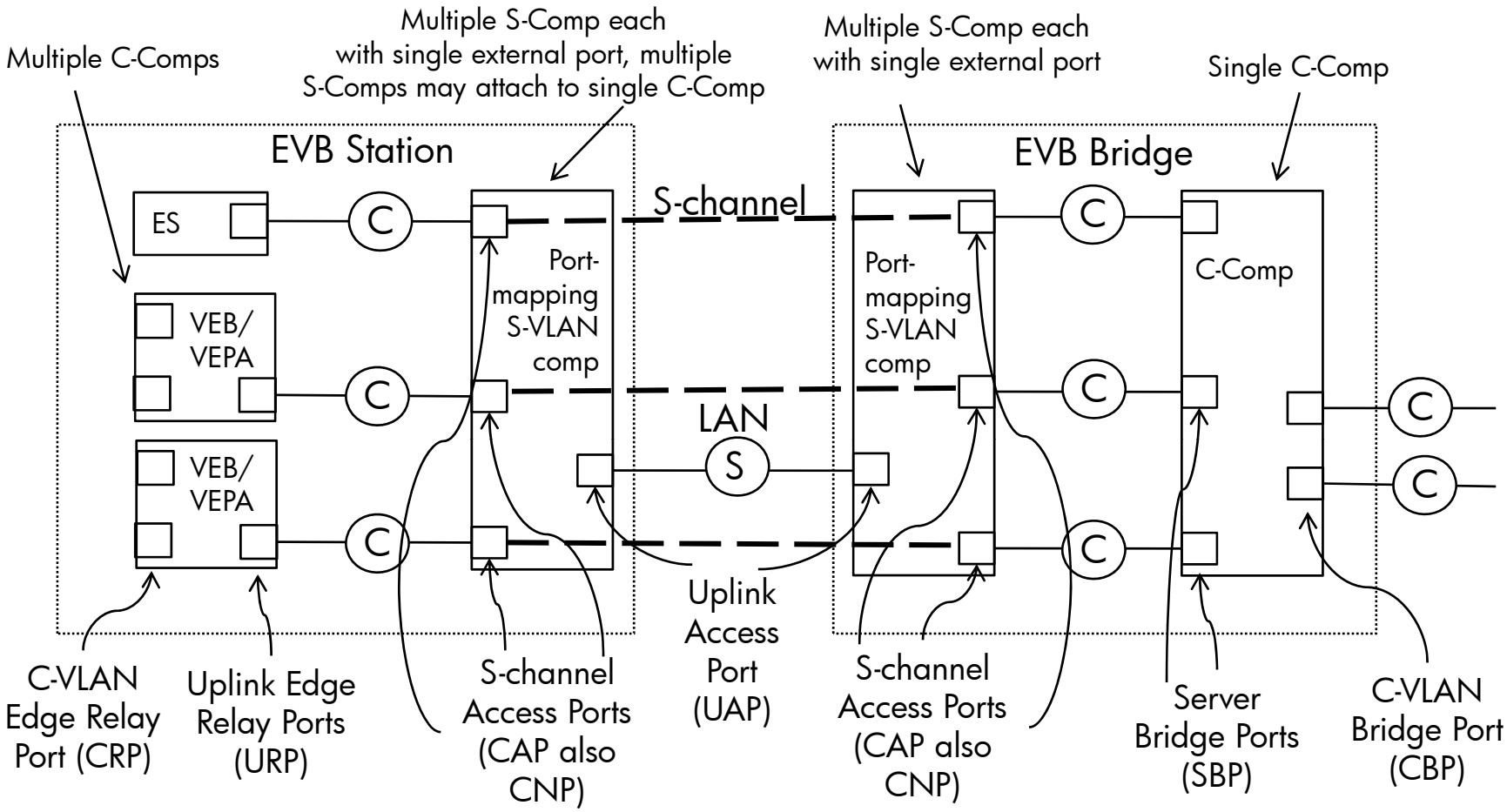
- Edge Virtual Bridging Server: The system containing V-LAN aware Edge Relays
- Edge Virtual Bridging Bridge: The system containing a single C-VLAN component which is the device attaching directly to an EVB Server.

Relationships among EVB Server 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

Some New(and old) Port Names:



- 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

Component table and external port table Station/Bridge system managed object

- External port lists are used to manage multi-component provider bridges. The current 802.1Qbc uses external port number to locate components.
- PB system model may references components by external port
  - each C-comp has a single BP
  - only a single S-comp exists and therefore is attached to any PNP or CNP
  - each port-mapping component has a single RSAP
- PBB BEB system model references components by componentID
  - CNPs and PIPs do not uniquely identify an I-comp (each BEB may have many I-comps with multiple external ports per I-comp)
- EVB components – Station requires componentID
  - Station can have multiple C-comps and multiple port-mapping S-comp when using multiple uplinks
- EVB Bridge – Could use the port model provider we have a single C-Comp in the EVBB
  - Bridge has multiple port-mapping S-comps however only a single C-comp
  - Bridge could be managed using either the port based or componentID model

EVB Bridge managed object

- Here each port of the Bridge is referenced by a bridge port number
- Internally, we use doubles of <BP#,SVID> to identify internal CAPs, internal LANs, and internal BPs of C-Comp.
- All external C-Comp BPs have a bridge port number, however internal BPs have not BP#
- Currently we don't have a way to extend this to the Station case since the station may have multiple C-comps and S-comps with generalized cross connects

EVB Station managed object

- All components have a componentID (compID)
- All component ports have a Port Number
- Therefore all internal and external ports can be referenced by the double <compID,Port Number>
- S-Component and S-Channels are managed by the UAP and S-Channel interface.
  - Configures CDCP, build S-Comp, build Default S-Channel, CAP, and UBP along with EVB LLDP
- This strategy used for both Bridge and Station.

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

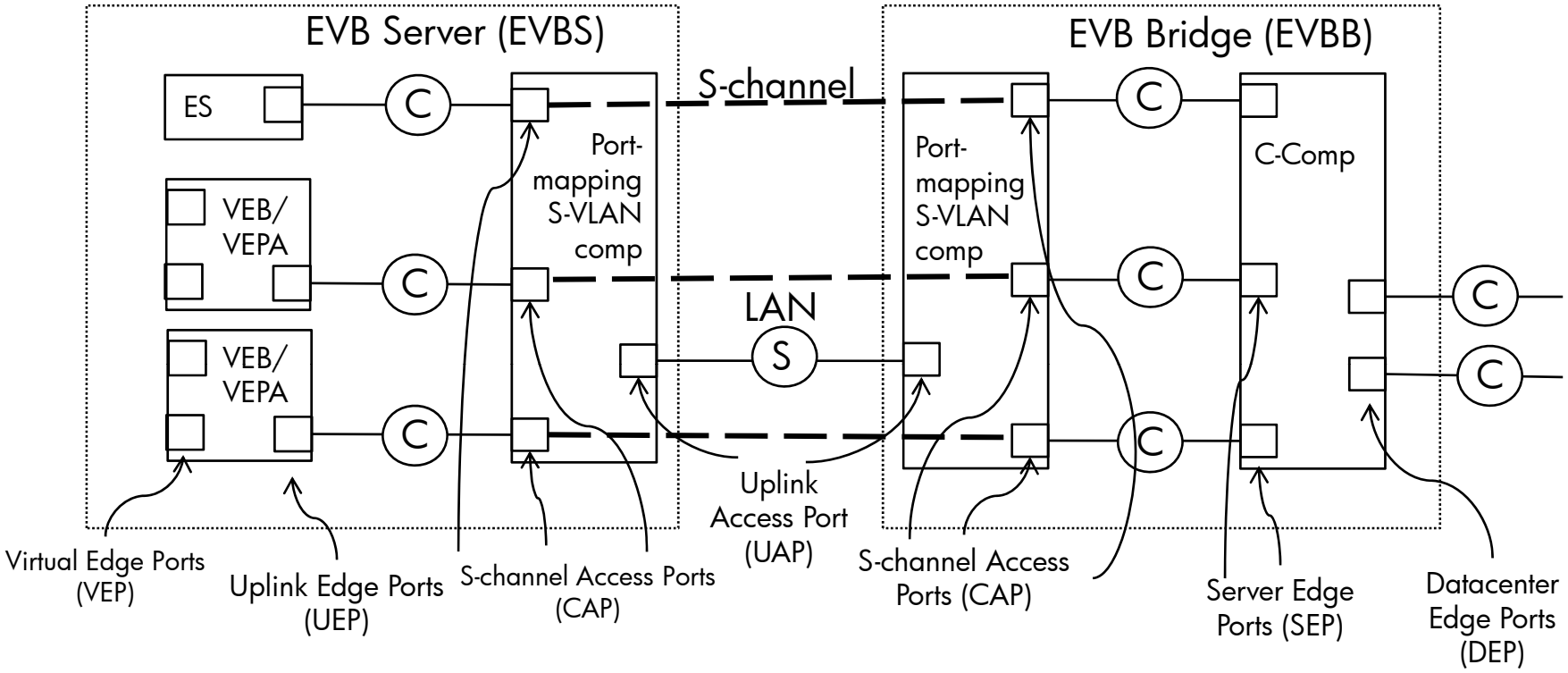
- Subclause 12.23 ? Need a number assigned
- VDP objects: One set per station
  - Station Objects (one set) New annex for station MIB? Let DMTF do station MIB? Bridge MIB in vSwitch?
    - Command response timeout
    - Keep Alive interval
    - Keep Alive response timeout
  - Bridge Objects (one set 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

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