Insert the following text, tables, and figures as new Clause 40:

40. Edge Virtual Bridging (EVB)

Figure 40-1 shows an overview of the architecture for edge virtual bridging (EVB). An end station that supports multiple virtual end stations is said to be an EVB station. Each virtual end station contains at least one virtual end station interface (VSI). Each virtual end station is allowed communication with other virtual end stations or other stations on the bridged LAN using edge relays (ER) (see 3.2).

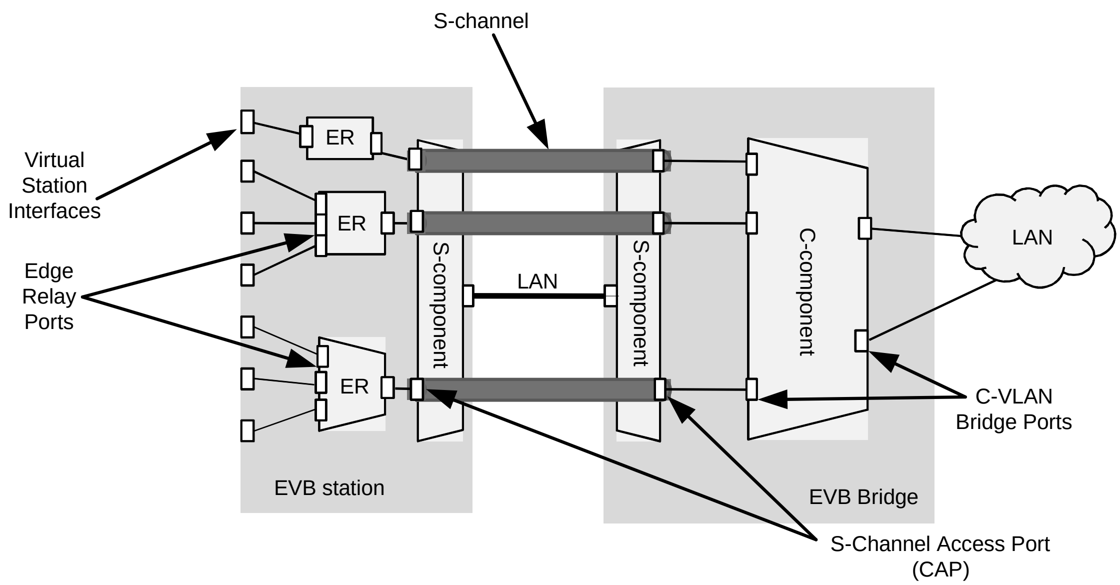

Figure 40-1—EVB architecture overview

An edge relay supports local relay among virtual end stations and/or between a virtual end station and other stations on the bridged LAN through a bridge called an EVB Bridge. The local relay among virtual end stations can require forwarding via the EVB Bridge utilizing reflective relay (8.6.1).

Connection between an edge relay port and a virtual end station is achieved via a Virtual Station Interface (VSI). Traffic from a VSI traverses an internal LAN connecting the edge relay port to the virtual end station. The operation of an edge relay does not result in any modifications to relayed frames over and above the normal tagging and un-tagging functions of a VLAN Bridge. Edge relays do not participate in, or affect, Spanning Tree operation; it is therefore necessary that the logical connectivity maintained within the station is always loop-free (5.20.1).

Each VSI instance is assigned a VSI manager ID, VSI type ID (VTID) and VSI ID (VSIID)[8]. The VDP protocol is used to associate a VSI instance and its related VLAN Identifier(s), MAC Address(s), GroupID(s), VSI manager ID, VTID, and VSIID with a port in the EVB Bridge. Similarly, the VDP protocol is used to de-associate a VSI instance from a port in the EVB Bridge.

NOTE 1—A VSI Type can be associated access and traffic controls.

An edge relay supports the multiplexing of one or more VSIs onto a single uplink relay port (URP). In order to achieve this, an ER can support two modes of operation. In the first mode, referred to as VEB, traffic

[8]The meaning of the VTID is decided by local system and network management.

transferred from one relay port to another relay port within the same ER is not forwarded beyond the ER. In the second mode, referred to as VEPA, traffic transferred from one relay port to another relay port within the same ER is forwarded beyond the ER to the EVB Bridge. In this case, the EVB Bridge's Station-facing Bridge Port (SBP) is enabled with reflective relay (8.6.1); this allows the frame to be reflected back to the same ER from which it was received by the EVB Bridge. The ER can then forward the frame to the destination. Thus, in the second mode, all traffic passes through the EVB Bridge's SBP and is subject to, for example, filtering or policing behavior assiciated with the EVB Bridge.

S-channels are point-to-point S-VLANs that span Port-mapping S-VLAN components (22.6.4) and can be used to connect one or more ERs to a single EVB Bridge, as illustrated in Figure 40-1. The end point of an S-channel is known as an S-channel Access Port (CAP); frames are S-tagged on entry to, and are always untagged on exit from, the S-VLAN component through a CAP.

40.1 EVB architecture without S-channels

Figure 40-2 illustrates the relationship of the EVB entities to the Bridge architecture when no S-channels are supported and no Port-mapping S-VLAN components are implemented. In this configuration, the EVB station and EVB Bridge may exchange a CDCP TLV over the nearest non-TMPR LLDP address with the SComp parameter set FALSE. If the CDCP TLV is not received the transmitting station or bridge is assumed to not support S-channels. If the EVB station or Bridge support the CDCP TLV then the nearest non-TPMR LLDP database will be located at the URP and (or) SBP.

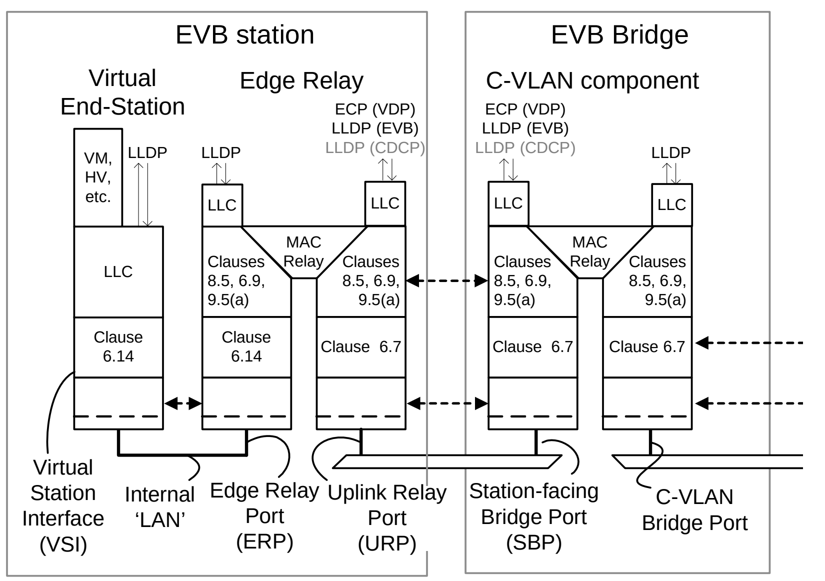

Figure 40-2—EVB architecture without S-channels

EVB TLVs (D.2.13) carried in the LLDP are used to exchange parameters that discover and configure EVB stations and Bridges requesting use of the reflective relay service and edge relays. In addition, EVB TLV exchanges discover support of the ECP and VDP protocols. Each uplink relay port (URP) and each Station-facing Bridge Port (SBP) has a nearest customer LLDP database which is used for exchange of the EVB TLV. Each edge relay can also have an LLDP databases at each edge relay port (ERP). ERs process LLDP frames according to (xxx).

The Virtual Station Interface (VSI) Discovery and Configuration Protocol (VDP, Clause 41) is used to coordinate the network resources to support a set of Virtual Station Interfaces that reside within an end station and attach to ERPs of an edge relay. An instance of VDP may exists for each VSI that is active within the end station. Each uplink relay port and each Station-facing Bridge Port has an instance of Edge Control

Protocol (ECP, Clause 43) used to support the VDP. These instances of ECP use the Nearest Customer Bridge address as the destination for frames exchanged between the URP and SBP. A VDP entity packs and unpacks VDP TLVs into PDUs that are handed to ECP for delivery. ECP provides reliable delivery of VDP SDUs.

40.2 EVB architecture with S-channels

Figure 40-3 and Figure 40-4 show the relationship of the EVB entities to the Bridge architecture when S-channels are supported. In this configuration, the EVB station and Bridge build nearest non-TPMR LLDP databases at their Uplink Access Ports (UAPs) and use them to exchange CDCP TLVs. Both the EVB station and EVB Bridge set the SComp parameter in the CDCP TLV to TRUE indicating they have an S-component. The CDCP protocol operating on the CDCP TLVs exchanged by LLDP is used to configure the S-channels.

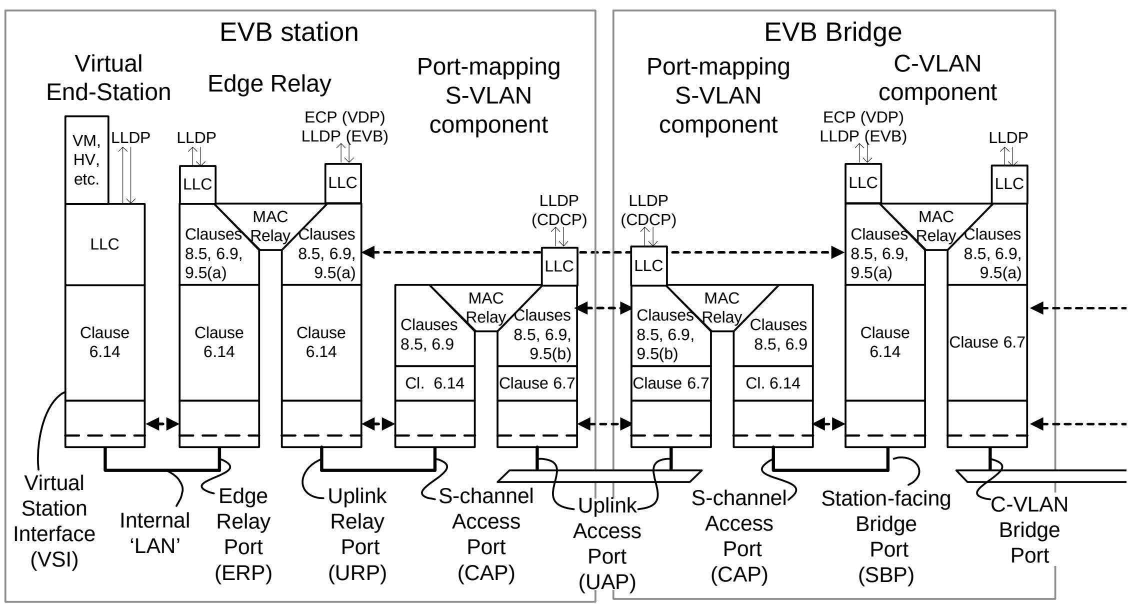

Figure 40-3—EVB archichtecture with S-channel

EVB stations and EVB Bridges use Port-mapping S-VLAN components (5.6, 22.6.4) to instantiate S-channels. Each S-channel connects an S-channel Access Port (CAP) on the EVB station to a CAP on the EVB Bridge. The CAP on an EVB station connects to a single URP on an edge relay via an internal LAN. The CAP on an EVB Bridge connects to a single SPB on the C-component via an internal LAN. There is a 1:1 relationship between a CAP and an SBP of the EVB Bridge, and a 1:1 relationship between a CAP and a URP of the EVB Station. S-channel support allows the EVB station and EVB Bridge to support multiple edge relays on each LAN. Each S-channel may attach to a different edge relay's URP.

Figure 40-4 shows the relationship between S-channels and CAPs and the positioning of a station's internal and external LANs. When S-channels are supported each physical LAN may be used to support multiple S-channels identified on the LAN by S-tagging. The S-channels are supported by one Port-mapping S-VLAN component for each UAP. Each Port-mapping S-VLAN component within an EVB system may be identified by it's single UAP. The CAPs of each S-channel may be identified by the UAP of the S-component and the S-VID of the S-channel. Each CAPs attaches by internal C-tagged LANs to a single URP or SBP.

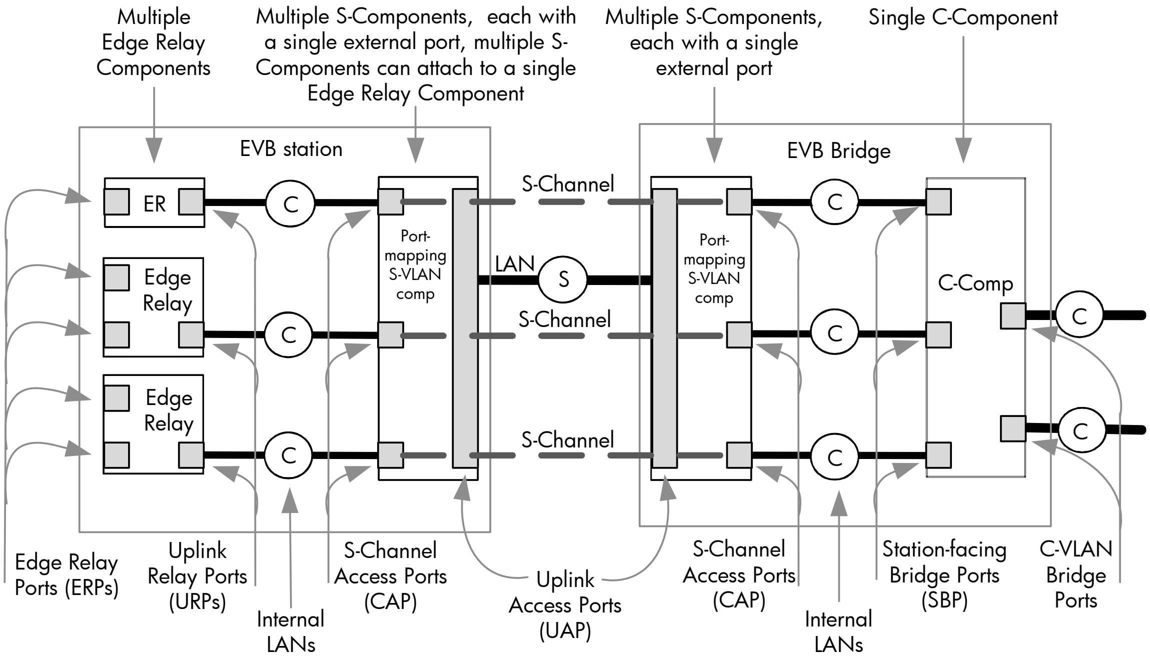

Figure 40-4—EVB components and internal LANs with S-channels

40.3 Asymmetric EVB architecture without S-channels

Figure 40-5 and Figure 40-6 illustrate the relationship of the EVB entities to the Bridge architecture when S-channels are supported by only one side at a time; either the EVB Bridge or EVB station, but not both simultaneously. In these configurations, the EVB entity with S-channel support will advertise it has an S-Component by build a nearest non-TPMR LLDP databases at its UAP and including the CDCP TLV with the parameter SComp set TRUE. The EVB entity without S-channel support may not advertise a nearest non-TPMR LLDP database or CDCP TLV, however will build the remote nearest non-TPMR LLDP database at it’s URP if it is an EVB station or at it’s SBP if it is an EVB Bridge. If the EVB entity without S-components chooses to support the nearest non-TPMR database with the CDCP TLV, then it shall set the SComp parameter in the CDCP TLV to FALSE.

Each Port-mapping S-VLAN component within an EVB entity supports an internal default S-channel identified by SVID 1 and uses it to pass untagged frames to it’s UAP. This default S-channel is always present in the entity supporting an S-VLAN component. In the asymetric configurations frames from system without S-channel support are carried over the default S-channel within the system having S-chanel support.

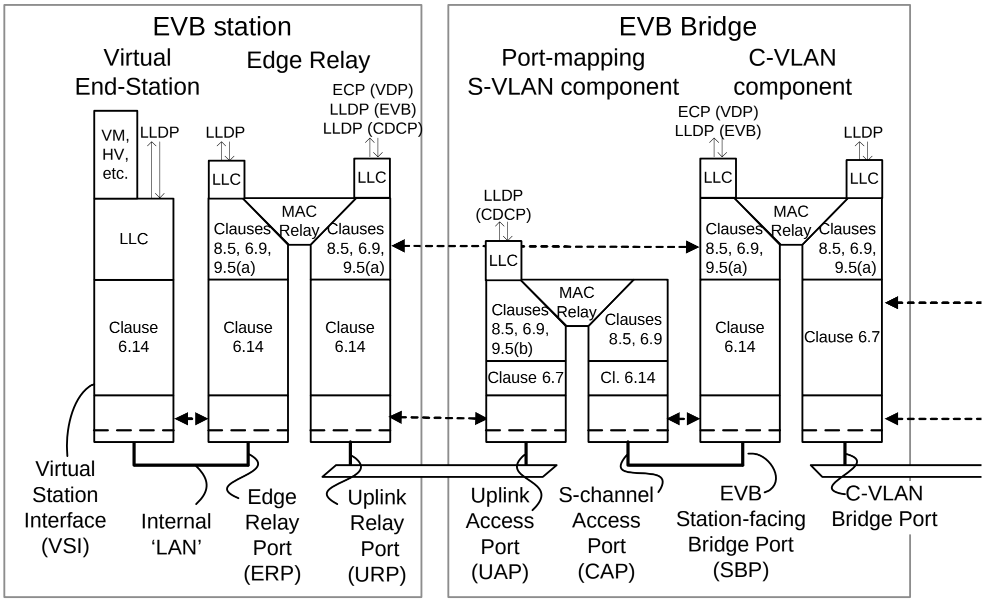

Figure 40-5—EVB architecture without S-channels including EVB Bridge S-component

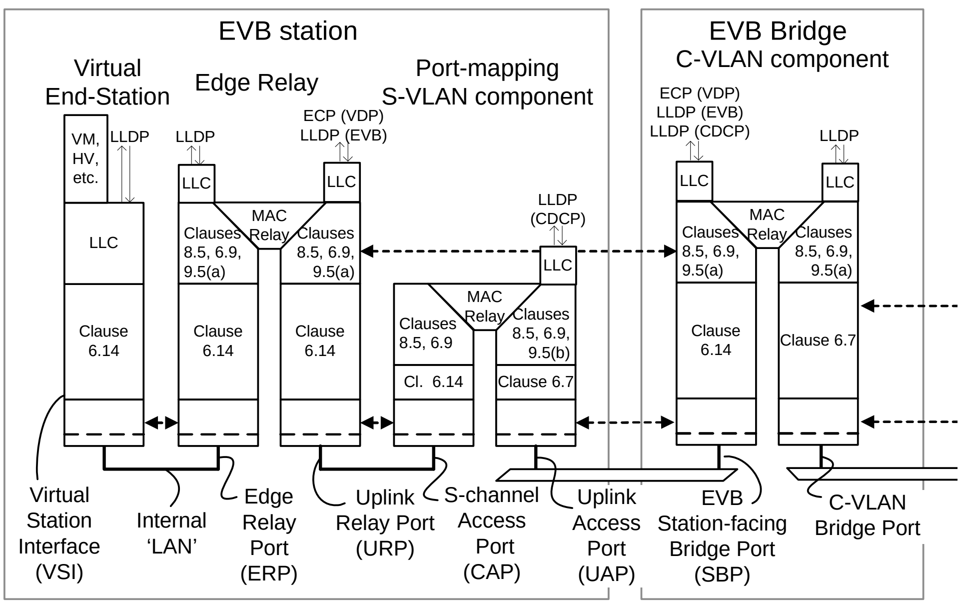

Figure 40-6—EVB architecture without S-channels including EVB station S-component