There are a number of scenarios where it is useful to construct a point-to-multipoint (P2MP, sometimes referred to as E-Tree) network topology. In the context of 802.1ad Provider Bridging, an example would be connecting multiple subscribers to an Internet Service Provider's router without permitting the subscribers to communicate with (or eavesdrop on) each other. One solution to this is to use a different VLAN for each customer. This has an obvious disadvantage in that it rapidly consumes VLAN IDs. An alternative solution can support a large number of subscribers using just two VLAN IDs and the concept of Asymmetric VLANs (802.1Q Annex B.1.3). Basically the idea is that the subscribers would transmit frames on the red VLAN and receive frames on the blue VLAN, while the ISP's router receives on the red VLAN and transmits on the blue VLAN. A description of how this solution scales to a very large number of subscribers can be found in Mick Seaman's paper "Scalable Q-in-Q Learning" (http://www.ieee802.org/1/files/public/docs2003/ScalableQinQLearning.pdf).

A question was raised whether this topology could be supported using the standard manageable parameters in 802.1Q. Provided the subscribers transmit and receive untagged frames, the only thing that needs to be added in p802.1Q-REV is the *Admit Only Untagged and Priority-tagged frames* value for the Acceptable Frame Types parameter (802.1Q-REV clause 8.6.1). The configuration of the bridge port to which a subscriber connects is:

- The Acceptable Frame Types parameter is set to the value *Admit Only Untagged and Priority-tagged frames*.
- The PVID is set to the value used for the red VLAN (the one used for traffic from the subscriber to the ISP).
- The subscriber port is included in the Member Set of the blue VLAN (used for traffic from the ISP to the subscriber) but is not included in the Member Set of the red VLAN. This allows frames on the blue VLAN, but not the red VLAN, to be forwarded to the subscriber.
- The Enable Ingress Filtering parameter is reset (i.e. disabling ingress filtering based on whether the port is in the Member Set of the VLAN). This prevents frames received from the subscriber from being discarded because the port is not in the Member Set of the red VLAN.
- The subscriber port is included in the Untagged Set of the blue VLAN. This results in the VLAN tag being stripped from all frames forwarded to the subscriber.

The configuration of the bridge port to which the ISP connects is analogous (reversing blue and red).

The reason that the subscriber can only transmit and receive untagged frames (more accurately, the port to which the subscriber attaches discards frames with non-zero VLAN IDs) is subtle. If the port were configured to accept tagged frames, then the only way to have it accept frames on the red VLAN but not the blue VLAN would be to set Enable Ingress Filtering and include the port in the Member Set of the red VLAN but not the blue. This is the opposite configuration of the Member Set than is required to control the frames transmitted to the subscriber. In order to support reception of tagged frames on the subscriber port, it would be necessary to split the Member Set port list into separate Ingress Member Set port list and Egress Member Set port list for each VLAN.