

Figure 32 shows how the models defined in 7.3 and 7.4 model VN_Port to VF_Port Virtual Links.

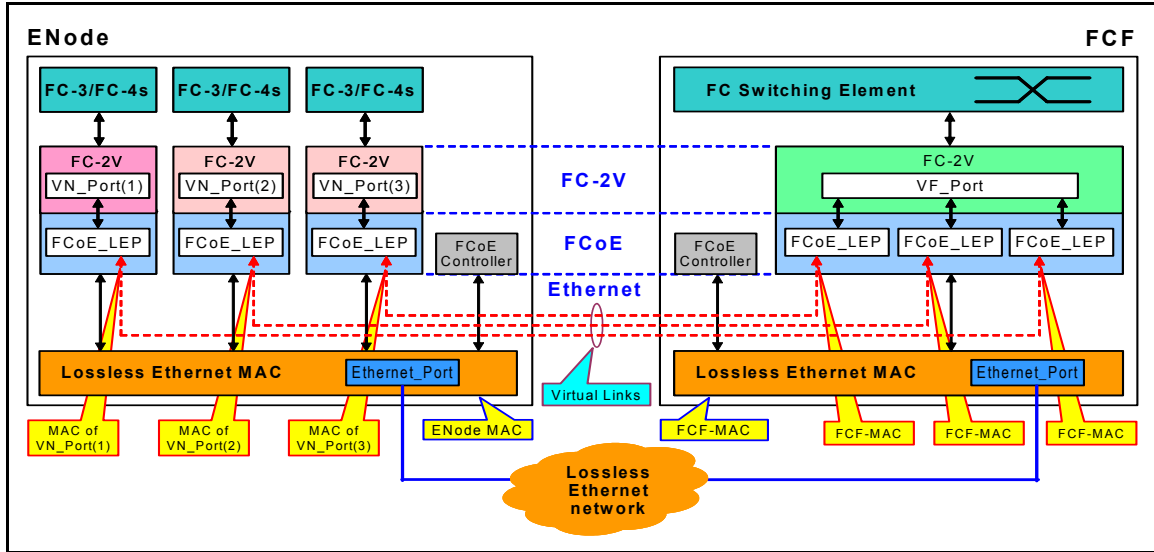


Figure 32 – VN_Port to VF_Port Virtual Links example

On successful completion of a FIP FLOGI Exchange, the FCoE Controller for an ENode MAC instantiates a VN_Port/FCoE_LEP pair (VN_Port(1) in figure 32) and the FCoE Controller of a VF_Port capable FCF-MAC instantiates a VF_Port/FCoE_LEP pair.

On successful completion of a FIP NPIV FDISC Exchange, the FCoE Controller for an ENode MAC instantiates a VN_Port/FCoE_LEP pair (VN_Port(2) in figure 32) and the FCoE Controller of a VF_Port capable FCF-MAC instantiates an additional FCoE_LEP to the instantiated VF_Port.

On successful completion of an additional FIP NPIV FDISC Exchange, the FCoE Controller of an ENode MAC instantiates a VN_Port/FCoE_LEP pair (VN_Port(3) in figure 32) and the FCoE Controller of a VF_Port capable FCF-MAC instantiates an additional FCoE_LEP to the instantiated VF_Port.

Figure 32 shows the Virtual Links end-points, that are the MAC addresses used by the VN_Ports (i.e., MAC of VN_Port(1), MAC of VN_Port(2), and MAC of VN_Port(3)), and the FCF-MAC address.

When SPMAs are used, multiple VN_Ports associated with an ENode MAC may use the same local MAC address to establish Virtual Links to the same VF_Port capable FCF-MAC. In this case, the Fibre Channel addressing information is needed to identify a specific VN_Port to VF_Port Virtual Link in addition to the pair of MAC addresses of the two link end-points. This case is modeled on an ENode MAC with multiple VN_Port/FCoE_LEP pairs, in which the FCoE_LEPs operate using the same local MAC address/remote MAC address pair. Incoming FCoE frames are delivered to the proper VN_Port/FCoE_LEP pair on the basis of the D_ID field. This case is modeled on an FCF-MAC with multiple FCoE_LEPs associated with a VF_Port, in which the FCoE_LEPs operate using the same local MAC address/remote MAC address pair.

7.6 VN_Port MAC addresses

ENodes may support Fabric Provided MAC Addresses (FPMAs) and/or Server Provided MAC Addresses (SPMAs) as VN_Port MAC addresses. The FIP protocol is used to negotiate between ENodes and FCFs which type of VN_Port MAC addresses are used (see 7.8.4.1).

FPMAs are assigned by FCFs while assigning an N_Port_ID to a VN_Port (see 7.8.4.1). A properly formed FPMA is one in which the 24 most significant bits equal the Fabric's FC-MAP value and the least significant 24 bits equal the N_Port_ID assigned to the VN_Port by the FCF. This guarantees that FPMAs are unique within the Fabric. The FC-MAP value is checked by the FIP discovery protocol (see 7.8.3) to ensure it is consistent across the Fabric. FPMAs should not be used for other protocols.

If the FC-MAP value is not administratively configured, then the FC-MAP value shall be set to DEFAULT_FC-MAP (see table 47). If the FC-MAP value is administratively configured, then the FC-MAP value should be in the range 0EFC00h to 0EFCFFh.

SPMAs are assigned by ENodes and validated by FCFs. SPMAs should be globally assigned, not locally generated (i.e., they should have the U/L bit set to zero, see IEEE 802.3-2008). SPMAs used for FCoE and FIP traffic should not be used for other protocols.

7.7 FCoE frame format

An FCoE frame is an Ethernet frame (see 802.3-2008) containing an FCoE PDU. FCoE frames shall be formatted in accordance with 802.3-2008 and the MAC Client Data field within the Ethernet frame shall contain an FCoE PDU (see table 21). The use of an 802.1Q tag header is optional and additional IEEE 802.1 defined tags may be present in an FCoE frame. See Annex B for examples of FCoE frames.

The format of an FCoE PDU is specified in table 21.

Table 21 – FCoE PDU format

Word	Bit 31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Type = FCoE_TYPE																Version				Reserved											
1	Reserved																															
2	Reserved																															
3	Reserved																								SOF							
4	(MSB)																															
n+3	Encapsulated FC Frame (n words)																								(LSB)							
n+4	EOF						Reserved																									

The Type field in the Ethernet header shall be set to FCoE_TYPE (see table 47). The Type field in the Ethernet header is not part of the FCoE PDU.

The Version field shall be set to FCoE_FRAME_VER (see table 47).