APPENDIX C

Packet Translation

When forwarding packets between FDDI and Ethernet, the FDDI module translates packets from one encapsulation format to another. This section describes the mapping of FDDI encapsulation formats to those of Ethernet.

Novell IPX

The special case for IPX has to do with translating between FDDI SNAP and the three associated Ethernet frame formats shown in Table C-1. When forwarding from Ethernet to FDDI, the FDDI module translates all three Ethernet frame formats into the FDDI SNAP format. To determine which Ethernet frame format the FDDI SNAP frame should be translated into, the FDDI modules use incoming frames to learn which frame format to use for a given MAC address. Alternatively, the FDDI module provides the option of defining the default Ethernet frame format to be used. Once configured, all IPX FDDI SNAP frames are translated into this Ethernet frame format.

Table C-1 FDDI to Ethernet Encapsulation Formats

FDDI	Ethernet
FDDI 802.2	IEEE 802.2
FDDI SNAP	Ethernet II
	IEEE 802.3
	IEEE SNAP

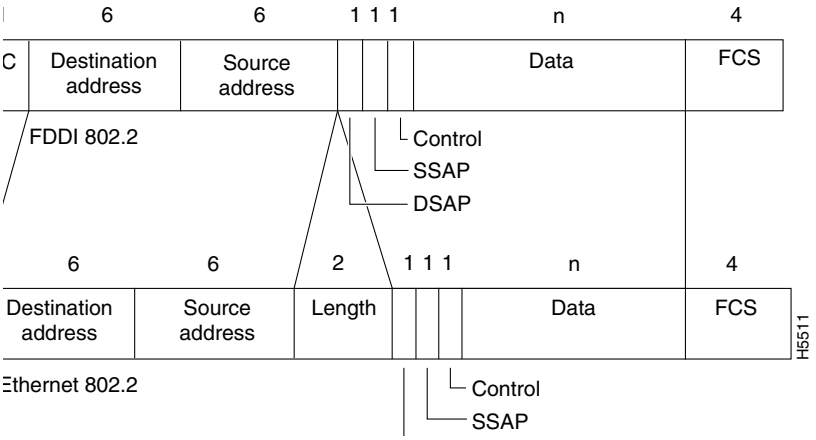
FDDI to Ethernet Translation

This section describes the techniques used to translate FDDI packets into Ethernet packets.

FDDI 802.2 to Ethernet 802.2

An FDDI 802.2 frame is translated into an Ethernet 802.2 frame as shown in Figure C-1. The values above the field represent the number of bytes. If the FDDI 802.2 frame is larger than 1517 bytes, the frame is dropped.

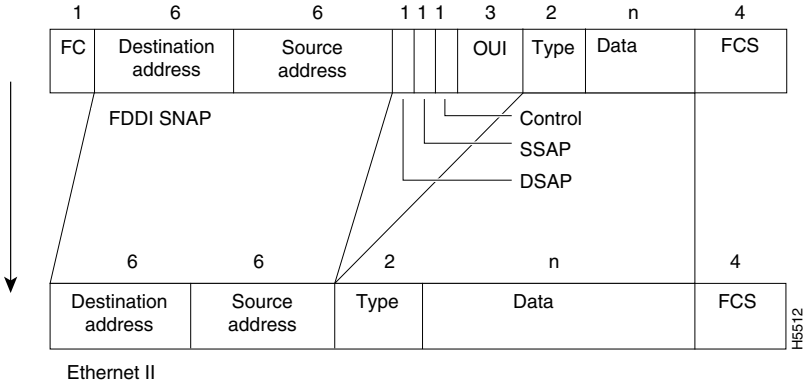
Figure C-1 FDDI 802.2 to Ethernet 802.2



FDDI SNAP to Ethernet II

An FDDI SNAP frame is translated into an Ethernet II frame as shown in Figure C-2. Frame translation from FDDI SNAP to Ethernet II requires that the FDDI frame be less than 1525 bytes. Frames larger than 1525 bytes are dropped, except when the frame can be fragmented with IP fragmentation. See “IP Fragmentation” for more information.

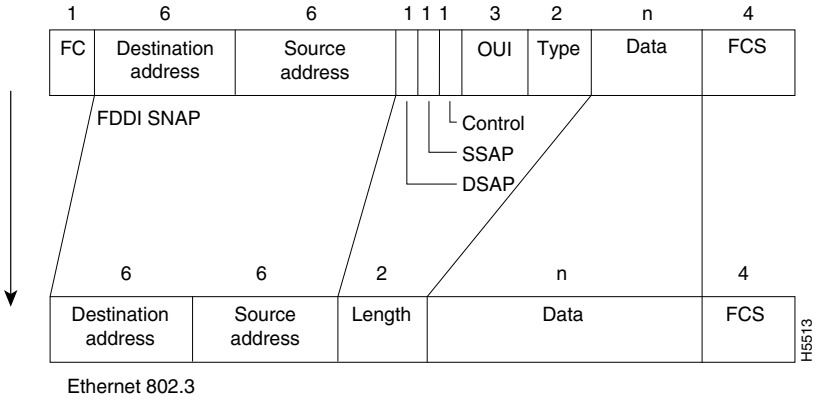
Figure C-2 FDDI SNAP to Ethernet II



FDDI SNAP to Ethernet 802.3

An FDDI SNAP frame is translated into an Ethernet 802.3 frame as shown in Figure C-3. If the length of the FDDI SNAP frame is larger than 1525 bytes, the frame cannot be translated and is dropped.

Figure C-3 FDDI SNAP to Ethernet 802.3



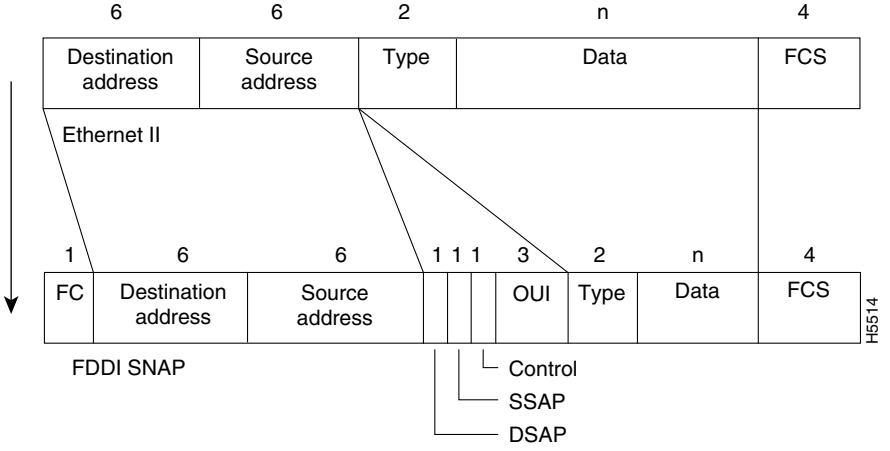
Ethernet to FDDI Translations

This section describes the techniques used to translate Ethernet packets into FDDI packets.

Ethernet II to FDDI SNAP

When an Ethernet II frame is received, the translation function adds the FC, LLC and SNAP-OUI fields as shown in Figure C-4. A SNAP-OUI of 00-00-00 is used for all Type values except 80-F3, where the SNAP-OUI of 00-00-F8 is used.

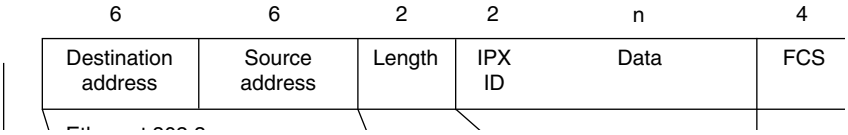
Figure C-4 Ethernet II to FDDI SNAP



Ethernet 802.3 (Novell) to FDDI SNAP

An Ethernet 802.3 frame is translated into an FDDI SNAP frame as shown in Figure C-5. When an Ethernet 802.3 frame is received, the FC field is added to the FDDI frame, and the Length field is stripped. Any padding in the Ethernet data field is dropped.

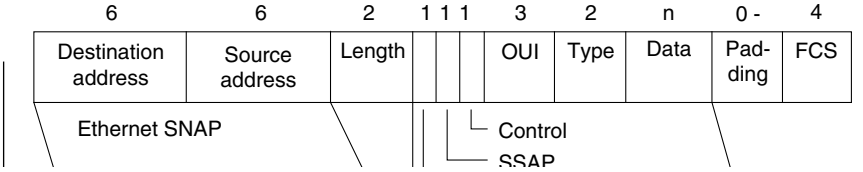
Figure C-5 Ethernet 802.3 (Novell) to FDDI-SNAP



Ethernet SNAP to FDDI SNAP

An Ethernet SNAP frame is translated into an FDDI SNAP frame as shown in Figure C-6. When an Ethernet SNAP frame is received, the FC field is added, and the Length field is stripped. Any padding in the Ethernet Data field is dropped.

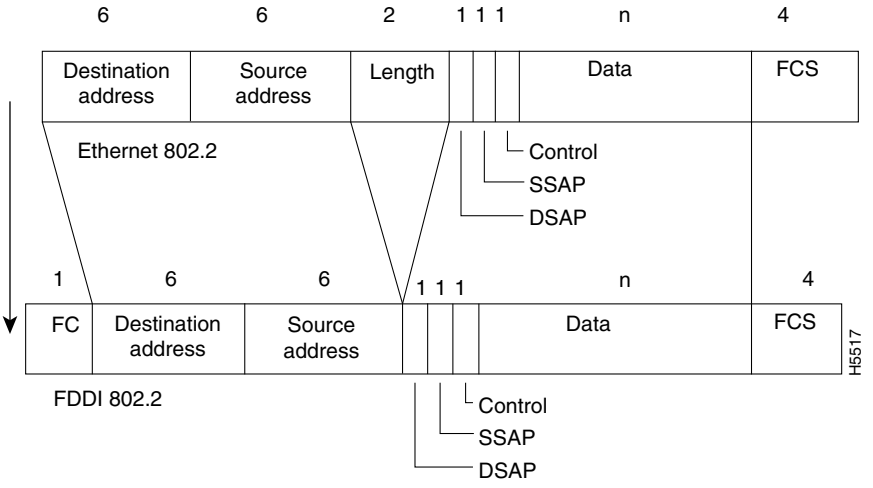
Figure C-6 Ethernet SNAP to FDDI SNAP



Ethernet 802.2 to FDDI 802.2

An Ethernet 802.2 frame is translated into an FDDI 802.2 frame as shown in Figure C-7. When an Ethernet 802.2 frame is received, the FC field is added to the FDDI frame, and the Length field is stripped. Any padding in the Ethernet Data field is dropped.

Figure C-7 Ethernet 802.2 to FDDI 802.2



IP Fragmentation

IP fragmentation is the process of splitting FDDI frames too large to transmit over Ethernet into two, three, or four smaller frames. Because data transfer efficiency is enhanced, network configuration is simplified as the maximum frame type for FDDI can remain at 4500 bytes. Before this fragmentation can take place, the following conditions on the network must be met:

- Protocol type IP (0800)
- FDDI SNAP frame type
- OUI equal to 000000

- Frame length greater than 1525 bytes, including FC and FCS
- IP header's *don't-fragment* flag is not set
- IP header is valid.

All other frames which are too long to transmit over Ethernet, and do not meet the conditions above, are dropped. IP fragmentation is defined in RFC 791.