F.4 Option 1 formats

Editors' Notes (DVJ): *To be removed prior to final publication.*

The following formats are provided for information purposes. All but one should be deleted; the remaining one should be moved to the formats clause.

The option 1 complete formats carry 48-bit destination station identifier *DSID48* and 48-bit source station identifier *SSID48* within the header. For remote transfers, the 48-bit *destinationMacAddress*, and 48-bit *sourceMacAddress* identifiers are also included within the header.

NOTE—This was previously called option (1d), but has been renamed due to its similarity with option (2a).

F.4.1 Option 1: Remote transfers

Remote flooded transfers involve prepending of ringlet-local routing information and flood forwarded the RPR ring, as illustrated in Figure F.30.

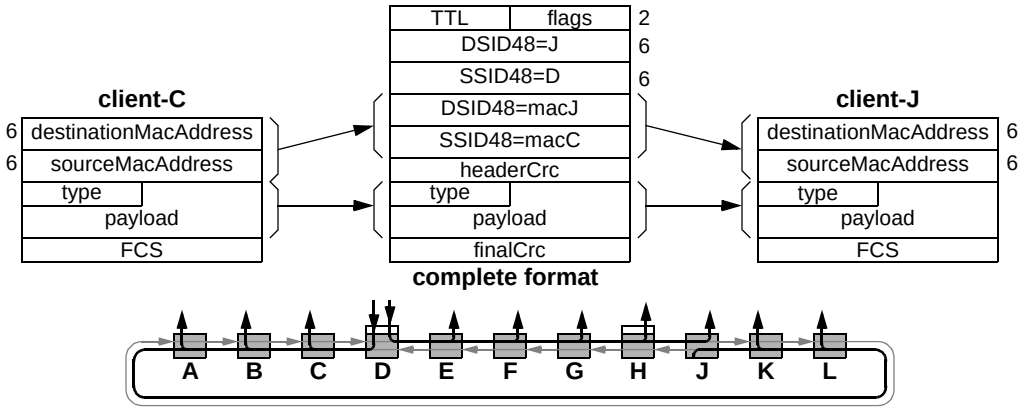

Figure F.30—Option 1: Remote flooded format

Remote unicast transfers involve prepending of ringlet-local routing information and direct forwarding on the RPR ring, as illustrated in Figure F.31.

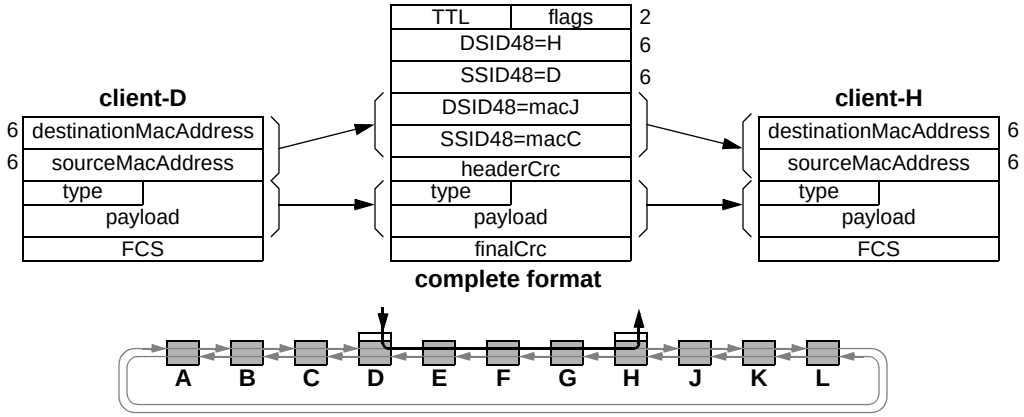

Figure F.31—Option 1: Remote unicast format

F.4.2 Option 1: Local transfer formats

Local multidrop (multicast or broadcast) frames have the same format and behavior, as illustrated in Figure F.32. In both cases, the DSID specifies the address of a specific station where the broadcast/multicast frame is stripped and the *destinMacAddress* specifies the multidrop address.

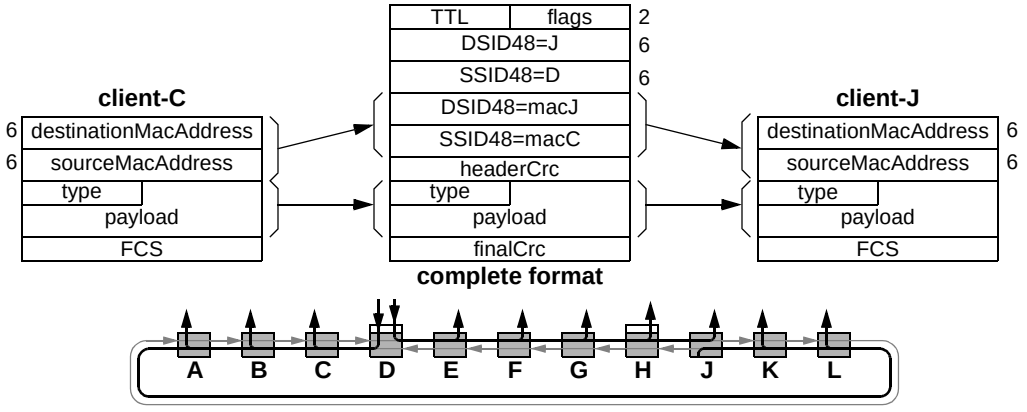

Figure F.32—Option 1: Local multidrop format

Local unicast has a compact format and behaves similarly to the remote unicast, as illustrated in Figure F.33.

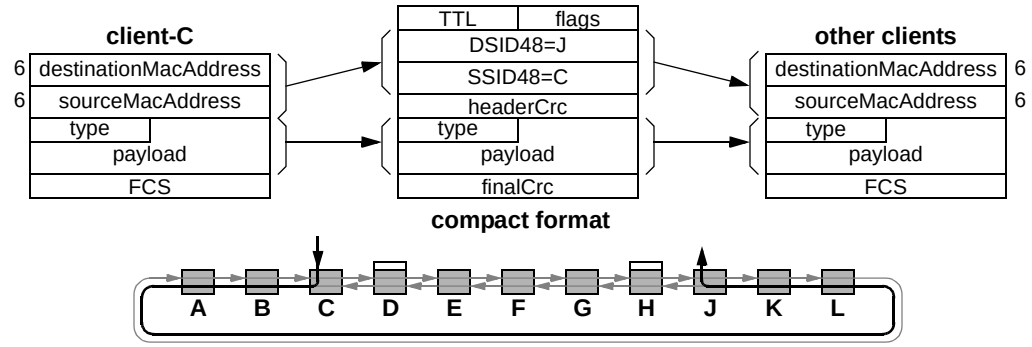

Figure F.33—Option 1: Local unicast format

A distinct format is necessary to efficiently support fairness frames, as illustrated in Figure F.34. Special processing is necessary, to avoid misinterpreting a payload field as what would otherwise be an considered SSID address.

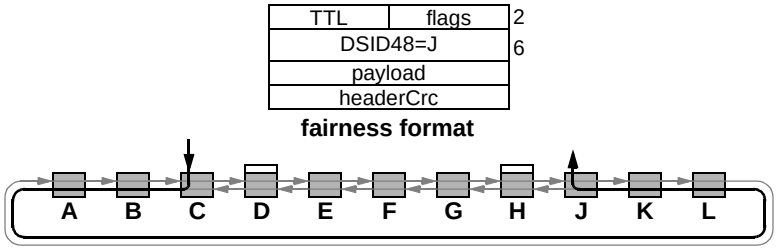

Figure F.34—Option 1: Fairness frame format

F.4.3 Option 1: Complete frame format

For option 1, the complete header includes 48-bit *DSID48*, *SSID48*, *destinationMacAddress*, and *sourceMacAddress* fields, illustrated in Figure F.35.

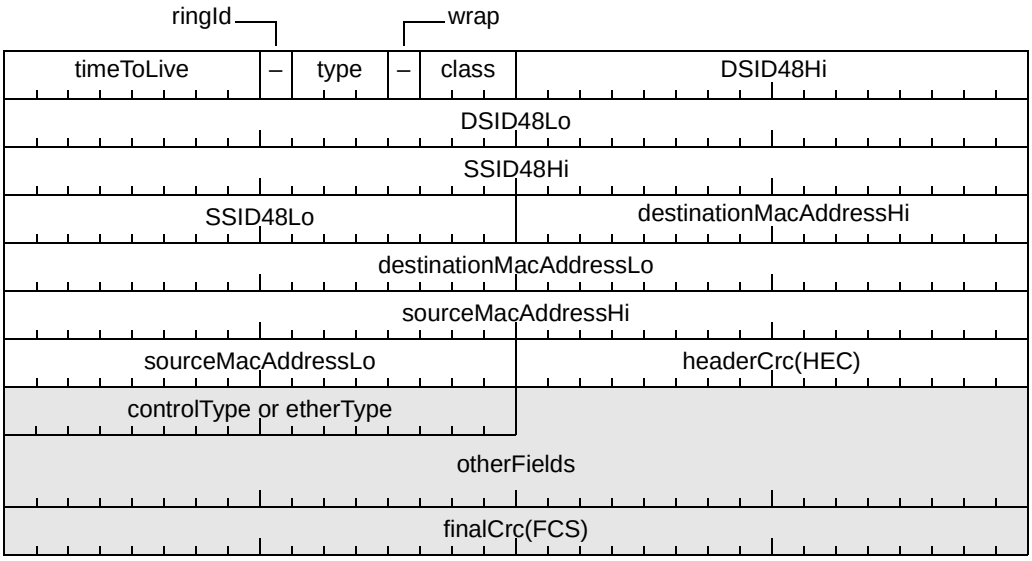

Figure F.35—Option 1: Complete header format

The ***ringID*** bit, the ***wrap*** bit, and the 3-bit ***class*** field are specified in F.8. The 3-bit ***type*** field specifies the frame format and forwarding features, as specified in Table F.2**.**

Table F.2—Option 1: *type* field values

Value	Name	Row	Description
0	FAIRNESS_CONTROL	F.2.1	Fairness control frame
1	COMPACT_CONTROL	F.2.2	Compact control frame
2	COMPACT_DATA	F.2.3	Compact data frame
3	COMPLETE_DATA	F.2.4	Complete client-data frame
4	BASIC_FLOOD_TOSS	F.2.5	Basic bridging, strip-at-destination
5	BASIC_FLOOD_COPY	F.2.6	Basic bridging, copy-strip at destination
6	ENHANCED_FLOOD_TOSS	F.2.7	Enhanced bridging, strip-at-destination
7	ENHANCED_FLOOD_COPY	F.2.8	Enhanced bridging, copy-strip at destination

Row F.2.1: A unicast fairness-format control frame directed to the MAC control function.
Row F.2.2: A unicast compact-format control frame directed to the MAC control function.
Row F.2.3: A unicast compact-format data frame directed to the client.
Row F.2.4: A unicast complete-format data frame directed to the client.

Row F.2.5: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.2.6: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.2.7: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by an enhanced-bridging capable station.
Row F.2.8: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by an enhanced-bridging capable station.

F.4.4 Option 1: Compact frame format

The option 1 compact format uses 48-bit *DSID48* and *SSID48* fields within the header, but excludes the *destinationMacAddress* and *sourceMacAddress* fields from the header, illustrated in Figure F.36.

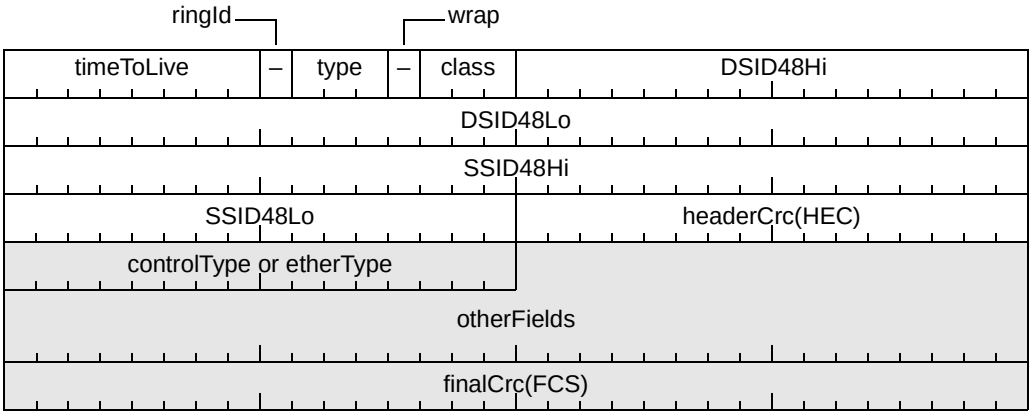

Figure F.36—Option 1: Compact header format

F.4.5 Option 1: Fairness frame format

A distinct fairness-frame header is mandated by the unacceptably large size of the option-1 header, as illustrated in Figure F.37.

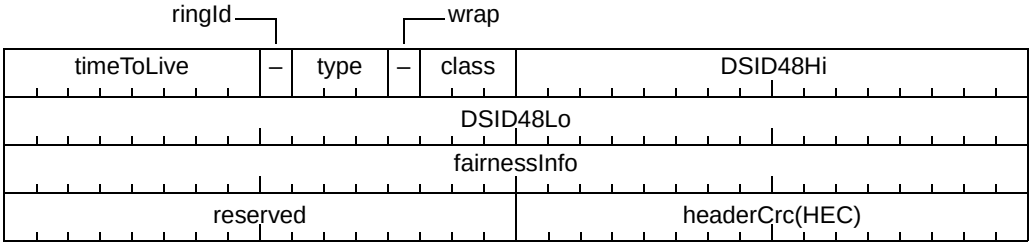

Figure F.37—Option 1: Fairness frame format

F.5 Option 2 formats

The option-2 formats transport 48-bit destination station identifier *DSID48* and 48-bit source station identifier *SSID48* within the header. The *DSID48* and *SSID48* identifiers have MAC address formats. For transparent bridging, the Ethernet frames are viewed as a payload; the 48-bit *destinationMacAddress* and 48-bit *sourceMacAddress* endpoint addresses are not placed in the RPR header.

F.5.1 Option 2: Remote transfer formats

Unlearned remote transfers involve prepending of ringlet-local routing information and flood forwarded the RPR ring, as illustrated in Figure F.38. The *DSID48* and *SSID48* station address correspond to RPR stations' externally visible MAC addresses.

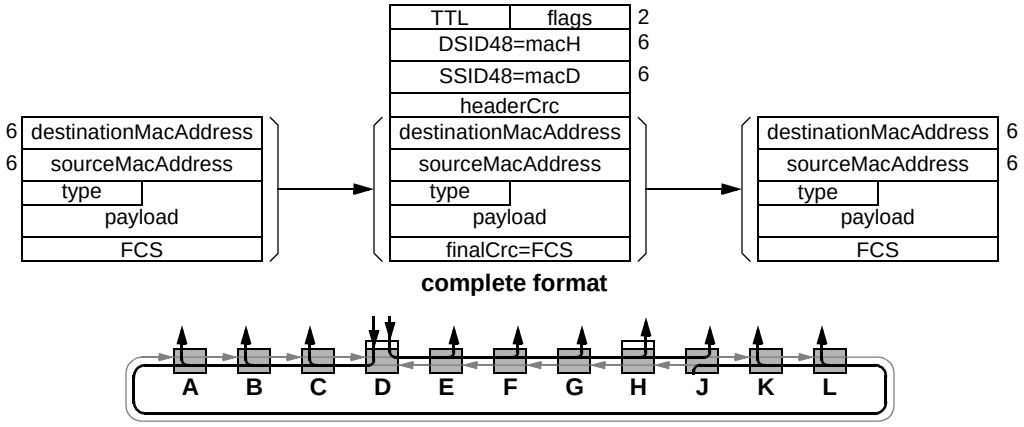

Figure F.38—Option 2: Remote flooding format

Learned remote transfers involve prepending of ringlet-local routing information and direct forwarding on the RPR ring, as illustrated in Figure F.39.

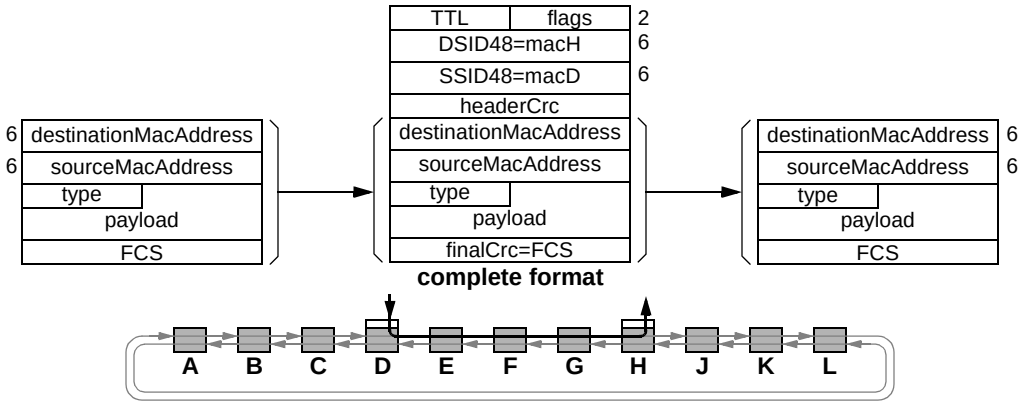

Figure F.39—Option 2: Remote remote-unicast format

F.5.2 Option 2: Local transfer formats

Local multidrop (multicast or broadcast) frames have the same format and behavior as flooding frames, as illustrated in Figure F.40. The *DSID48* and *SSID48* station address correspond to RPR stations' externally visible MAC addresses.

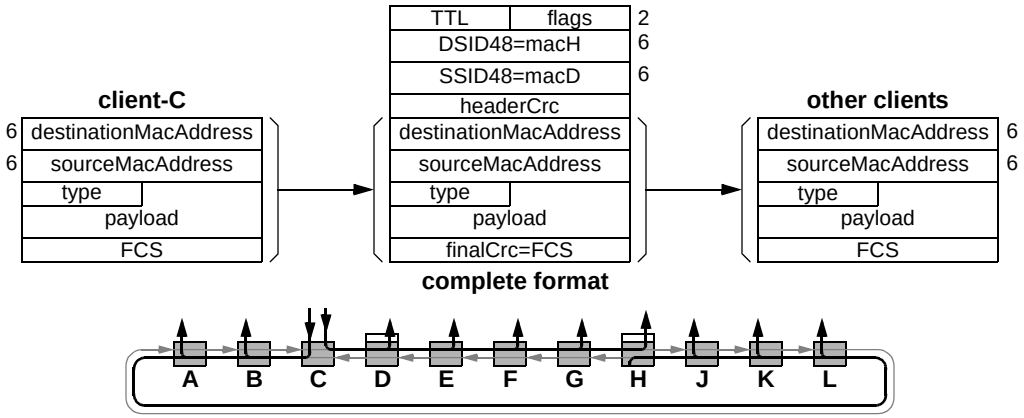

Figure F.40—Option 2: Local multidrop format

Local unicast Ethernet frames have a more compact format, but similar behaviors, as illustrated in Figure F.41.

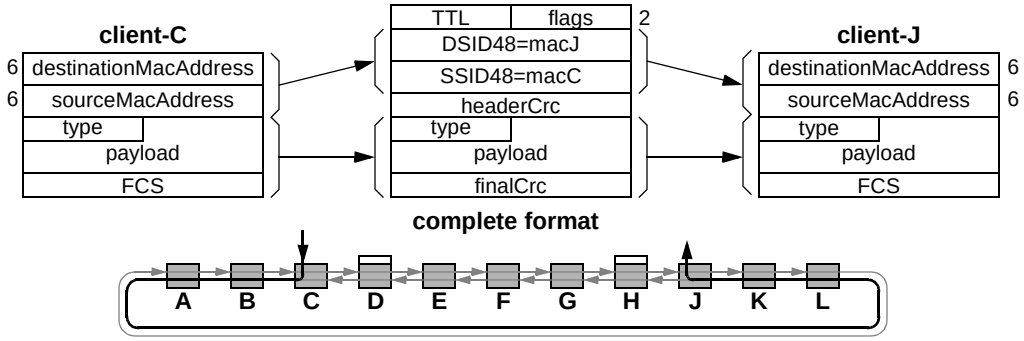

Figure F.41—Option 2: Local unicast format

A distinct format is necessary to efficiently support fairness frames, as illustrated in Figure F.42. Special processing is necessary, to avoid misinterpreting a payload field as what would otherwise be an considered a *sourceMacAddr* address.

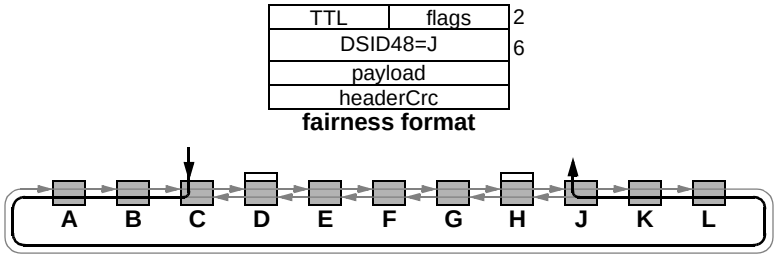

Figure F.42—Option 2: Compressed fairness format

F.5.3 Option 2: Complete frame format

For option-2, the header includes 48-bit *DSID48* and *SSID48* addresses while the payload transports 48-bit *destiationMacAddress* and *sourceMacAddress* fields, as illustrated in Figure F.43.

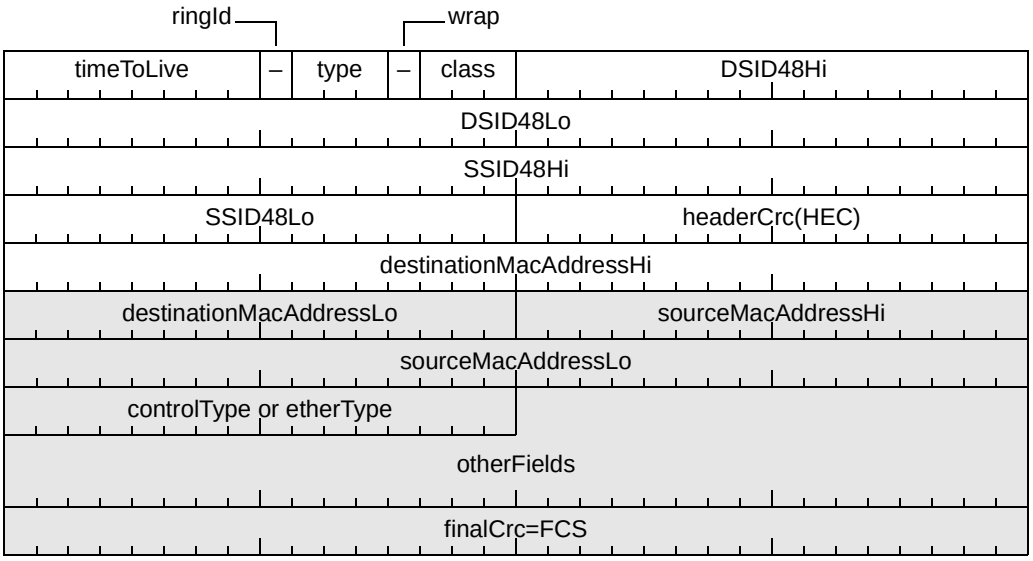

Figure F.43—Option 2: Complete header format

The ***ringID*** bit, the ***wrap*** bit, and the 3-bit ***class*** field are specified in F.8. The 3-bit ***type*** field specifies the frame format and forwarding features, as specified in Table F.3**.**

Table F.3—Option 2: *type* field values

Value	Name	Row	Description
0	FAIRNESS_CONTROL	F.3.1	Fairness control frame
1	—	F.3.2	Reserved
2	COMPLETE_CONTROL	F.3.3	Complete control frame
3	COMPLETE_DATA	F.3.4	Complete client-data frame
4	BASIC_FLOOD_TOSS	F.3.5	Basic bridging, strip-at-destination
5	BASIC_FLOOD_COPY	F.3.6	Basic bridging, copy-strip at destination
6	ENHANCED_FLOOD_TOSS	F.3.7	Enhanced bridging, strip-at-destination
7	ENHANCED_FLOOD_COPY	F.3.8	Enhanced bridging, copy-strip at destination

Row F.3.1: A unicast fairnessormat control frame directed to the MAC control function.
Row F.3.3: A unicast complete-format control frame directed to the MAC control function.
Row F.3.4: A unicast complete-format data frame directed to the client.

Row F.3.5: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.3.6: A multidrop complete-format data frame for stations between the SSID and DSID locations,

including the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.3.7: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by an enhanced-bridging capable station.
Row F.3.8: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by an enhanced-bridging capable station.

F.5.4 Option 2: Compact frame format

The compact option-2a frame includes DSID48 and SSID48 addresses by no MAC addresses are contained within the payload, as illustrated in Figure F.44.

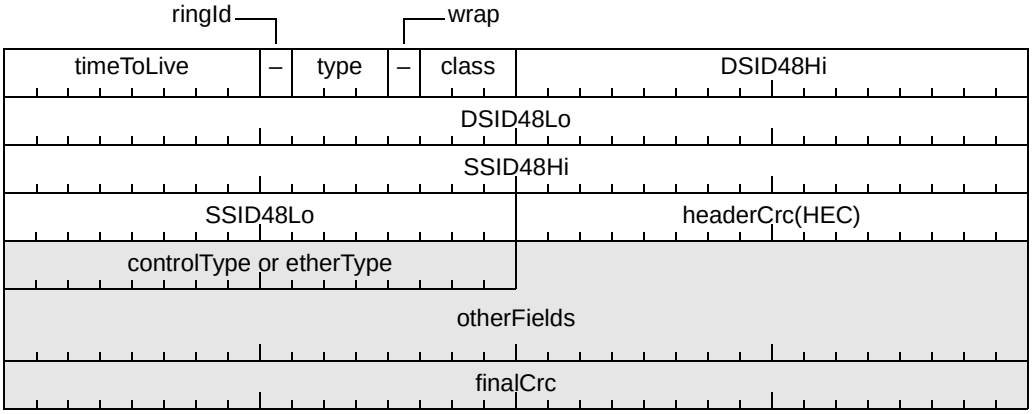

Figure F.44—Option 2: Compact frame format

The ***ringID*** bit, the ***wrap*** bit, and the 3-bit ***class*** field are specified in F.8. The 3-bit ***type*** field specifies the frame format and forwarding features, as specified in Table F.3**.**

F.5.5 Option 2: Fairness frame format

An option-2a fairness-frame header format is also mandated, as illustrated in Figure F.45.

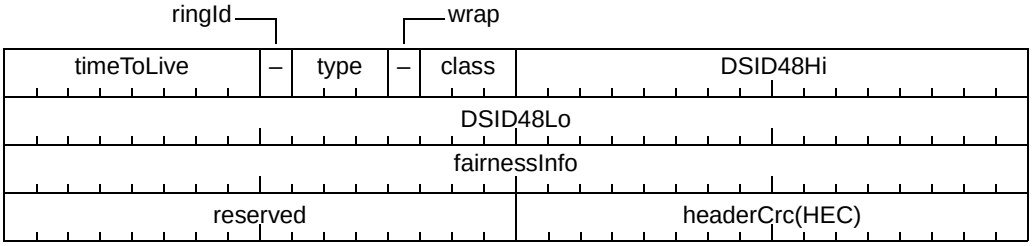

Figure F.45—Option 2: Fairness frame format

F.6 Option 3 formats

The option-3 formats transport 8-bit destination station identifier *DSID8*, 8-bit source station identifier *SSID8*r, 48-bit *destinationMacAddress,* and 48-bit *sourceMacAddress* endpoint MAC addresses in the heade.

F.6.1 Option 3: Remote transfers

Remote flooded transfers involve prepending of ringlet-local routing information and flood forwarded the RPR ring, as illustrated in Figure F.46.

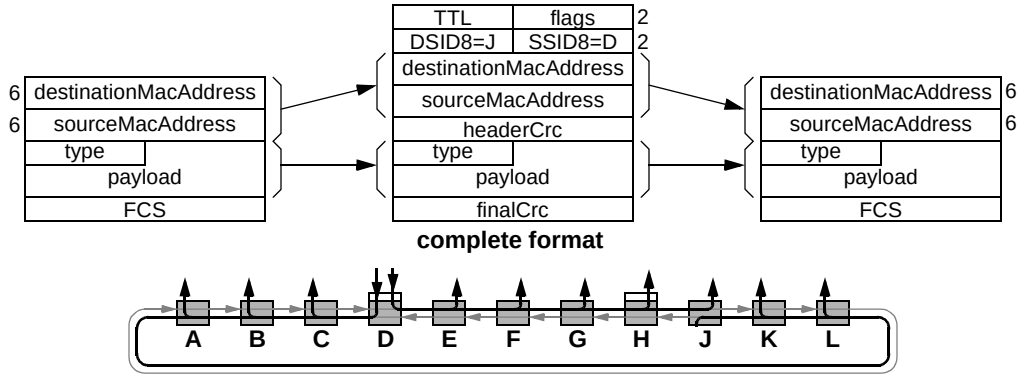

Figure F.46—Option 3: Remote flooded format

Remote unicast transfers involve prepending of ringlet-local routing information and direct forwarding on the RPR ring, as illustrated in Figure F.47.

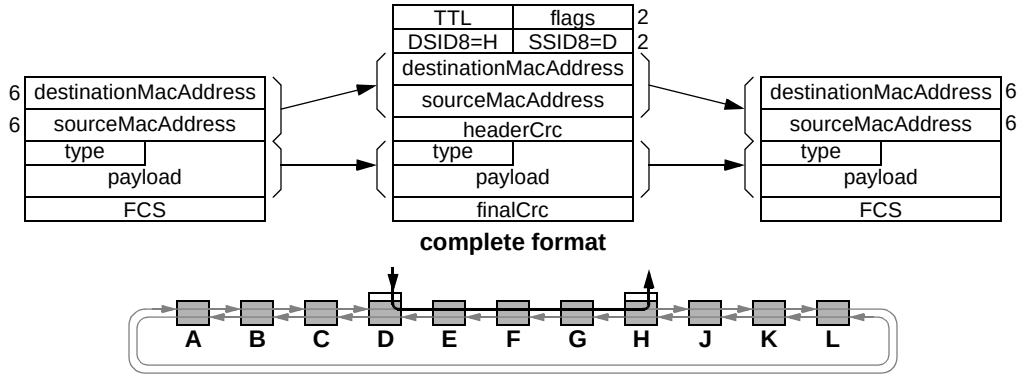

Figure F.47—Option 3: Remote unicast format

F.6.2 Option 3: Local transfer formats

Local multidrop (multicast or broadcast) frames have the same format and behavior, as illustrated in Figure F.48. In both cases, the *DSID8* specifies the address of a specific station where the broadcast/ multicast frame is stripped and the *destinMacAddress* specifies the multicast-group address.

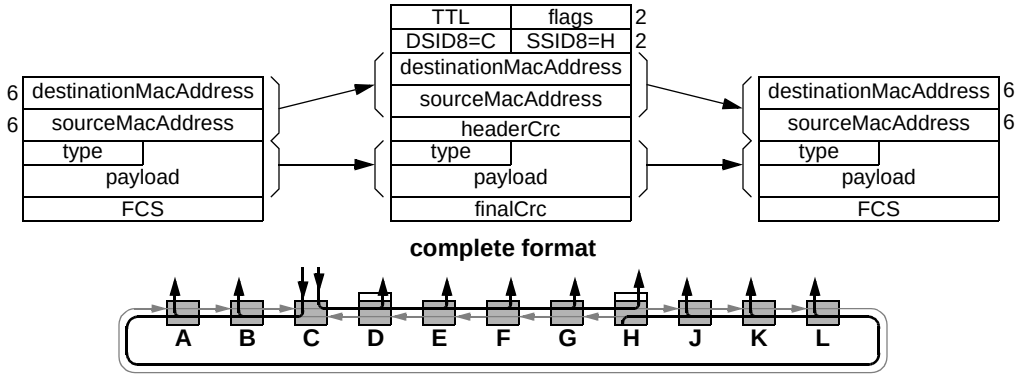

Figure F.48—Option 3: Local multidrop format

Local unicast has a compact format and behaves similarly to the remote unicast, as illustrated in Figure F.49.

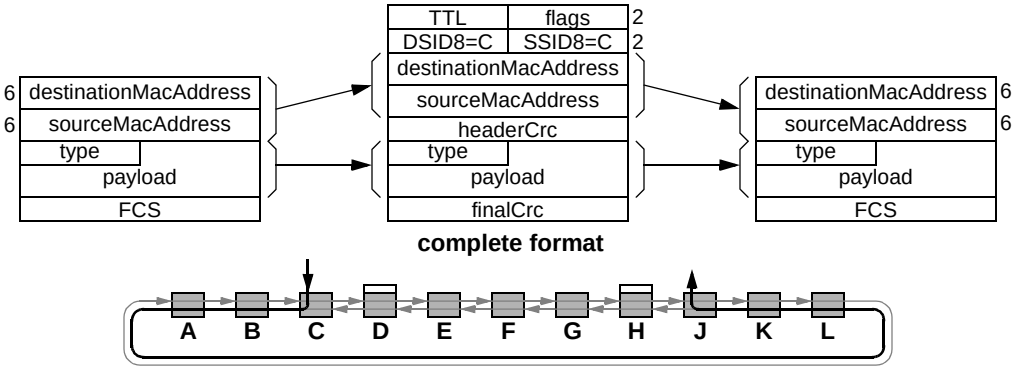

Figure F.49—Option 3: Local unicast format

The compact format is sufficient to support fairness frames, as illustrated in Figure F.50.

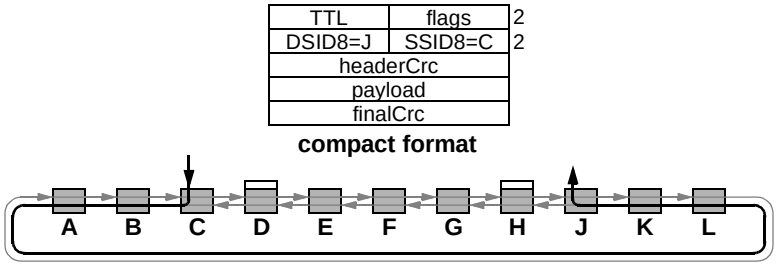

Figure F.50—Option 3: Fairness format

F.6.3 Option 3: Complete frame format

The option-3 header includes 8-bit DSID8 and SSID8 identifiers along with 48-bit *destinationMacAddress* and *sourceMacAddress* endpoint MAC addresses, as illustrated in Figure F.51.

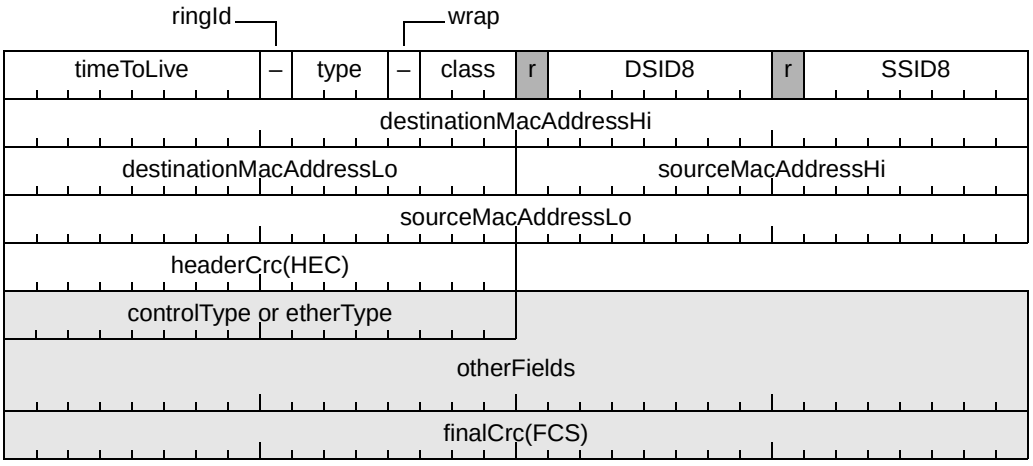

Figure F.51—Option 3: Complete header format

The ***ringID*** bit, the ***wrap*** bit, and the 3-bit ***class*** field are specified in F.8. The 3-bit ***type*** field specifies the frame format and forwarding features, as specified in Table F.4**.**

Table F.4—Option 3: *type* field values

Value	Name	Row	Description
0	FAIRNESS_CONTROL	F.4.1	Fairness control frame
1	—	F.4.2	Reserved
2	UNICAST_CONTROL	F.4.3	Complete control frame
3	UNICAST_DATA	F.4.4	Complete client-data frame
4	BASIC_FLOOD_TOSS	F.4.5	Basic bridging, strip-at-destination
5	BASIC_FLOOD_COPY	F.4.6	Basic bridging, copy-strip at destination
6	ENHANCED_FLOOD_TOSS	F.4.7	Enhanced bridging, strip-at-destination
7	ENHANCED_FLOOD_COPY	F.4.8	Enhanced bridging, copy-strip at destination

Row F.4.1: A unicast compact-format control frame directed to the MAC control function.
Row F.4.2: A unicast compact-format data frame directed to the client.
Row F.4.3: A unicast complete-format control frame directed to the MAC control function.
Row F.4.4: A unicast complete-format data frame directed to the client.

Row F.4.5: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.4.6: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by a basic-bridging limited station.

Row F.4.7: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by an enhanced-bridging capable station.
Row F.4.8: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by an enhanced-bridging capable station.

F.6.4 Option 3: Fairness frame format

The fairness frame is a compacted form of the option-1b header, as illustrated in Figure F.52.

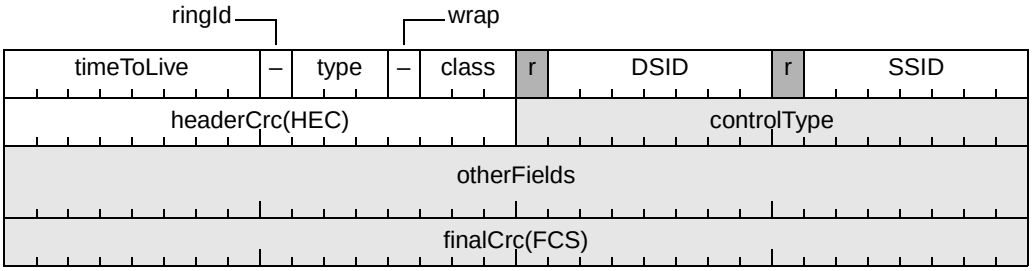

Figure F.52—Option 3: Fairness frame format

F.7 Option 4 formats

The option-4 transports 8-bit *DSID8* and *SSID8* station identifiers in the header while while transporting 48-bit *destiationMacAddress* and *sourceMacAddress* endpoint MAC addresses in the payload.

F.7.1 Option 4: Remote transfers

Remote flooded transfers involve prepending of ringlet-local routing information and flood forwarded the RPR ring, as illustrated in Figure F.53.

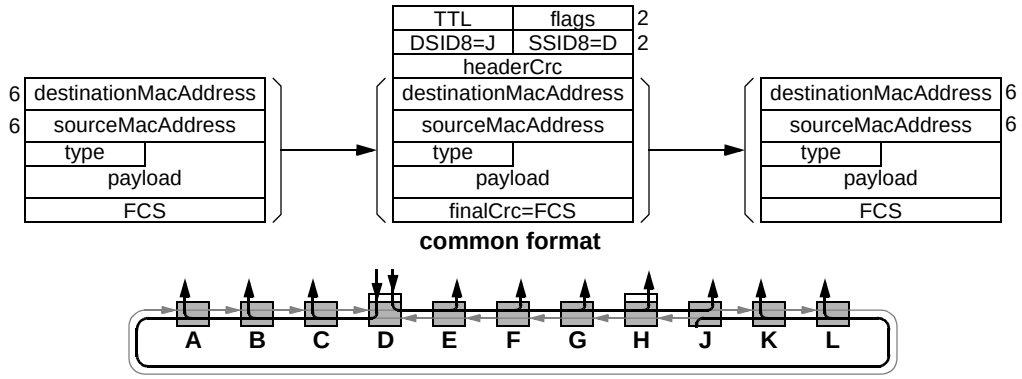

Figure F.53—Option 4: Remote flooded format

Remote unicast transfers involve prepending of ringlet-local routing information and direct forwarding on the RPR ring, as illustrated in Figure F.54.

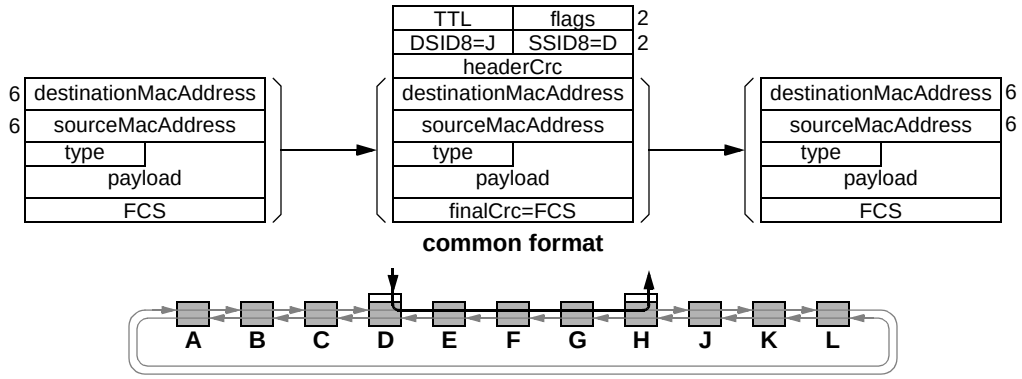

Figure F.54—Option 4: Remote unicast format

F.7.2 Option 4: Local transfer formats

Local multidrop (multicast or broadcast) frames have the same format and behavior, as illustrated in Figure F.55. In these cases, the *DSID8* specifies the address of a specific station where the broadcast/ multicast frame is stripped and the *destinMacAddress* specifies the multicast-group address.

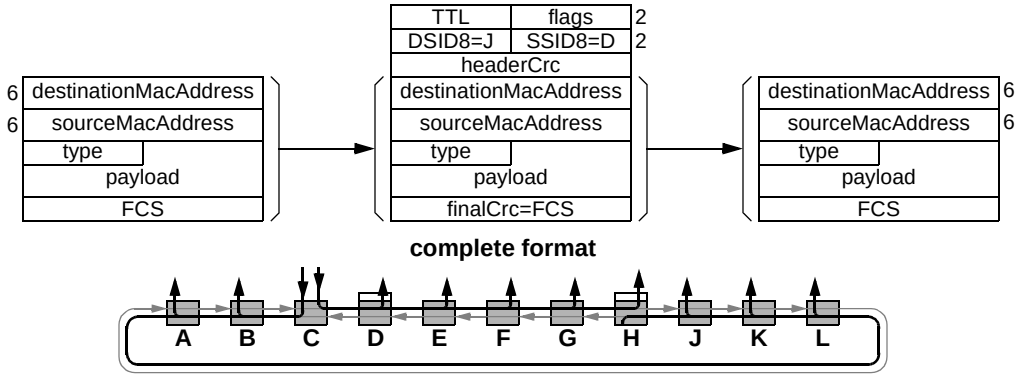

Figure F.55—Option 4: Local multidrop format

Local unicast frames have the same format and behavior, as illustrated in Figure F.56. The *DSID8* specifies the a specific station where the unicast frame is stripped and the *destinMacAddress* specifies the expected endpoint MAC address.

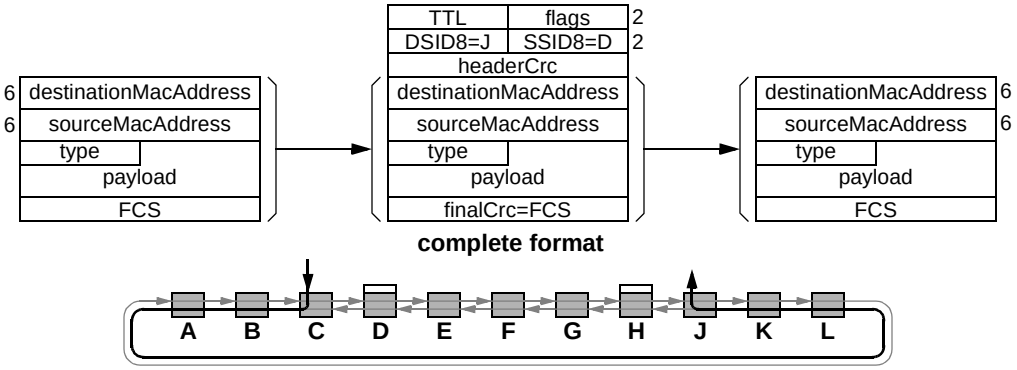

Figure F.56—Option 4: Local unicast format

F.7.3 Option 4: Fairness format

The fairness format utilizes the standard header with a distinct type code identifying the compact format and functional nature of its payload, as illustrated in Figure F.57.

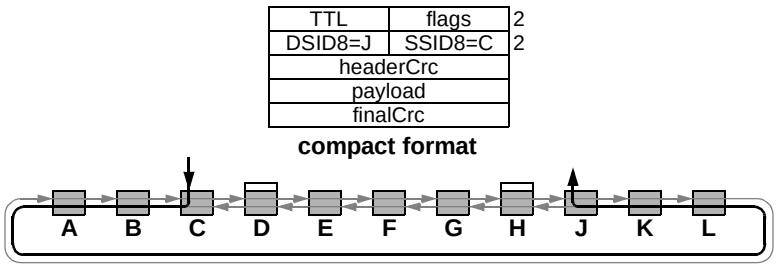

Figure F.57—Option 4: Fairness frame format

F.7.4 Option 4: Complete frame format

Complete option-4 frame transports 8-bit *DSID8* and *SSID8* identifiers in the header while transporting 48-bit *destiationMacAddress* and *sourceMacAddress* fields within the payload, as illustrated in Figure F.58.

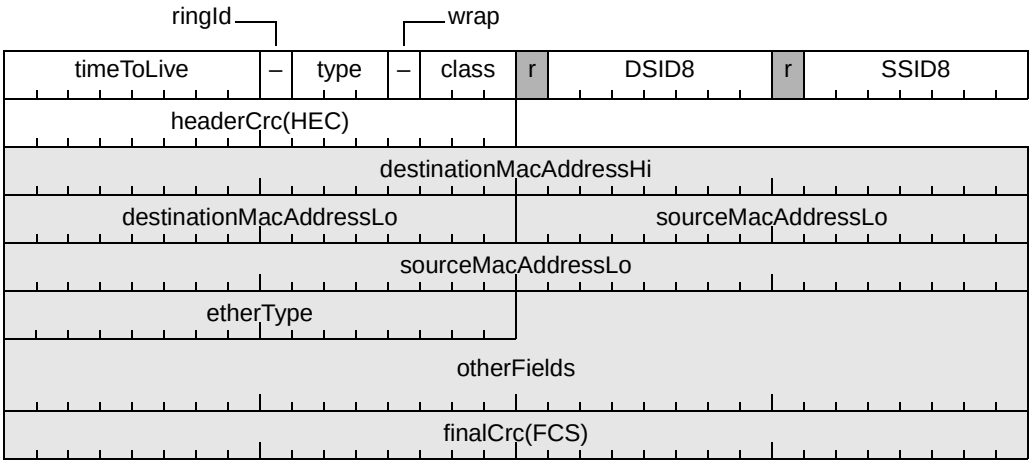

Figure F.58—Option 4: Complete frame format

The ***ringID*** bit, the ***wrap*** bit, and the 3-bit ***class*** field are specified in F.8. The 3-bit ***type*** field specifies the frame format and forwarding features, as specified in Table F.5**.**

Table F.5—Option 4: *type* field values

Value	Name	Row	Description
0	FAIRNESS_CONTROL	F.5.1	Fairness control frame
1	COMPACT_DATA	F.5.2	Localized data frame
2	COMPLETE_CONTROL	F.5.3	Complete control frame
3	COMPLETE_DATA	F.5.4	Complete client-data frame
4	BASIC_FLOOD_TOSS	F.5.5	Basic bridging, strip-at-destination
5	BASIC_FLOOD_COPY	F.5.6	Basic bridging, copy-strip at destination
6	ENHANCED_FLOOD_TOSS	F.5.7	Enhanced bridging, strip-at-destination
7	ENHANCED_FLOOD_COPY	F.5.8	Enhanced bridging, copy-strip at destination

Row F.5.1: A unicast compact-format fairness frame distributed fairness frame information.
Row F.5.3: A unicast complete-format control frame directed to the MAC control function.
Row F.5.4: A unicast complete-format data frame directed to the client.

Row F.5.5: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.5.6: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by a basic-bridging limited station.
Row F.5.7: A multidrop complete-format data frame for stations between the SSID and DSID locations, excluding the DSID location. This frame was sourced by an enhanced-bridging capable station.

Row F.5.8: A multidrop complete-format data frame for stations between the SSID and DSID locations, including the DSID location. This frame was sourced by an enhanced-bridging capable station.

F.7.5 Option 4: Compact frame format

The compact option-1a control frame transports 8-bit *DSID8* and *SSID8* identifiers in the header, as illustrated in Figure F.59.

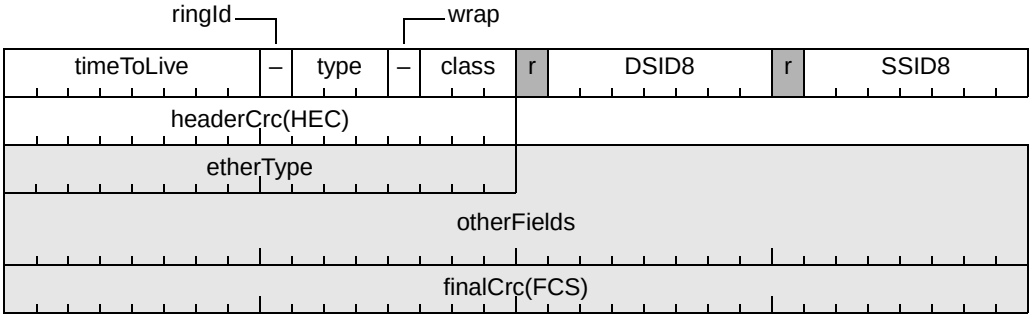

Figure F.59—Option 4: Compact control-frame format

F.7.6 Option 4: Fairness frame format

The header content of a fairness frame is standard, as illustrated in Figure F.60.

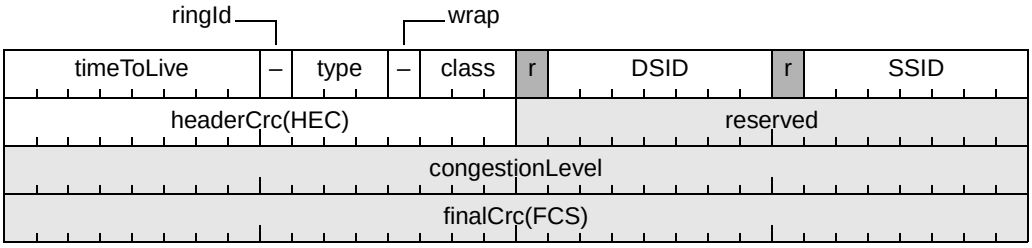

Figure F.60—Option 4: Fairness frame format

F.8 Common header fields

F.8.1 Common header fields

The encoding of the leading fields within the header is option-type independent, as illustrated in Figure F.61.

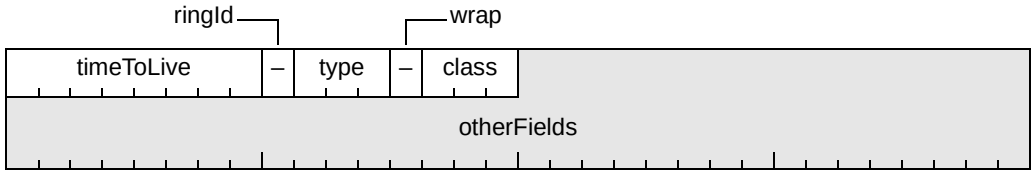

Figure F.61—Tight header format

The ***wrap*** bit values of 0 and 1 identify wrap-ineligible and wrap-eligible frames respectively. The type-dependent 3-bit ***type*** field specifies the frame format and forwarding features.

The ***ringID*** bit values of 0 and 1 indicate the frame was sourced on ring-0 and ring-1 respectively. The 3-bit ***class*** field values specify the class of RPR traffic, as specified in Figure F.6.

Table F.6—*class* field values

Value	Name	Description
0-1	—	Reserved
2	CLASS_A0	Class-A0 (baseline) traffic
3	CLASS_A1	Class-A1 (STQ option generated) traffic
4	CLASS_B0	Class-B0 (within profile) traffic
5	CLASS_B1	Class-B1 (out-of profile) traffic
6	CLASS_C	Class-C weighted fairness traffic
7	—	Reserved

F.9 Figures for Bob

Simplified RPR MAC data-path model, as shown in Figure F.62.

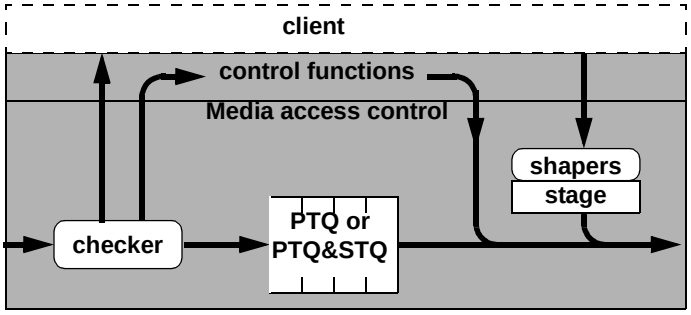

Figure F.62—Simplified RPR MAC transit path

Another figure.

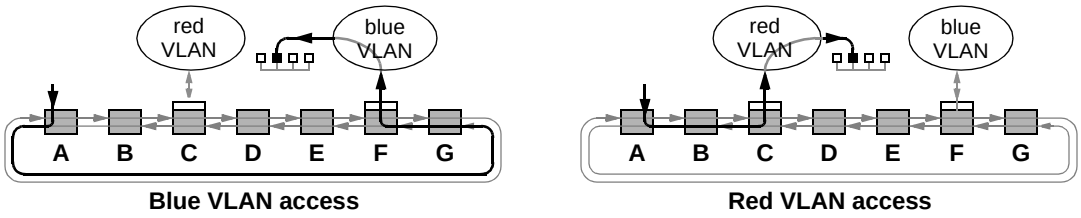

Figure F.63—Spatial reuse of independent VLANs