The anatomy of a flow table

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1 OFPXMT_OFB_IN_PORT, OFPXMT_OFB_IN_PHY_PORT

```
flow0(1 = _InPort, 2 = _InPhyPort,...) ->
    ...
```

2 OFPXMT_OFB_METADATA

```
flow0(..., 100 = _Metadata,...) ->
    ...
```

3 OFPXMT_OFB_ETH_DST, OFPXMT_OFB_ETH_SRC, OFPXMT_OFB_ETH_TYPE

```
flow0(..., <<0,1,2,3,4,5,_/binary>> = _EthHdr,...) ->
    ...
flow0(..., <<_:6/binary,0,1,2,3,4,5,_/binary>> = _EthHdr,...) ->
    ...
flow0(..., <<_:12/binary,16#80,0,_/binary>> = _EthType,...) ->
    ...
```

4 OFPXMT_OFB_VLAN_VID, OFPXMT_OFB_VLAN_PCP

```
flow0(..., <<_:12/binary,16#81,0,_:20,42:12,_/binary>> = _EthType,...) ->
    ...
flow0(..., <<_:12/binary,16#81,0,_:16,0:3,_/bits>> = _EthType,...) ->
    ...
```

Match field	Description
OFPXMT_OFB_IN_PORT	Switch input port.
OFPXMT_OFB_IN_PHY_PORT	Switch physical input port.
OFPXMT_OFB_METADATA	Metadata passed between tables.
OFPXMT_OFB_ETH_DST	Ethernet destination address.
OFPXMT_OFB_ETH_SRC	Ethernet source address.
OFPXMT_OFB_ETH_TYPE	Ethernet frame type.
OFPXMT_OFB_VLAN_VID	VLAN id.
OFPXMT_OFB_VLAN_PCP	VLAN priority.
OFPXMT_OFB_IP_DSCP	IP DSCP (6 bits in ToS field).
OFPXMT_OFB_IP_ECN	IP ECN (2 bits in ToS field).
OFPXMT_OFB_IP_PROTO	IP protocol.
OFPXMT_OFB_IPV4_SRC	IPv4 source address.
OFPXMT_OFB_IPV4_DST	IPv4 destination address.
OFPXMT_OFB_TCP_SRC	TCP source port.
OFPXMT_OFB_TCP_DST	TCP destination port.
OFPXMT_OFB_UDP_SRC	UDP source port.
OFPXMT_OFB_UDP_DST	UDP destination port.
OFPXMT_OFB_SCTP_SRC	SCTP source port.
OFPXMT_OFB_SCTP_DST	SCTP destination port.
OFPXMT_OFB_ICMPV4_TYPE	ICMP type.
OFPXMT_OFB_ICMPV4_CODE	ICMP code.
OFPXMT_OFB_ARP_OP	ARP opcode.
OFPXMT_OFB_ARP_SPA	ARP source IPv4 address.
OFPXMT_OFB_ARP_TPA	ARP target IPv4 address.
OFPXMT_OFB_ARP_SHA	ARP source hardware address.
OFPXMT_OFB_ARP_THA	ARP target hardware address.
OFPXMT_OFB_IPV6_SRC	IPv6 source address.
OFPXMT_OFB_IPV6_DST	IPv6 destination address.
OFPXMT_OFB_IPV6_FLABEL	IPv6 Flow Label
OFPXMT_OFB_ICMPV6_TYPE	ICMPv6 type.
OFPXMT_OFB_ICMPV6_CODE	ICMPv6 code.
OFPXMT_OFB_IPV6_ND_TARGET	Target address for ND.
OFPXMT_OFB_IPV6_ND_SLL	Source link-layer for ND.
OFPXMT_OFB_IPV6_ND_TLL	Target link-layer for ND.
OFPXMT_OFB_MPLS_LABEL	MPLS label.
OFPXMT_OFB_MPLS_TC	MPLS TC.
OFPXMT_OFP_MPLS_BOS	MPLS BoS bit.
OFPXMT_OFB_PBB_ISID	PBB I-SID.
OFPXMT_OFB_TUNNEL_ID	Logical Port Metadata.
OFPXMT_OFB_IPV6_EXTHDR	IPv6 Extension Header pseudo-field
OFPXMT_OFB_PBB_UCA	PBB UCA header field.

5 OFPXMT_OFB_IP_DSCP, OFPXMT_OFB_IP_ECN, OFPXMT_OFB_IP_PROTO

```
flow0(..., <<_,0:6,_/bits>> = _Ip4Hdr, none = _Ip6Hdr,...) ->
    ...
flow0(..., <<_:14,0:2,_/binary>> = _Ip4Hdr, none = _Ip6Hdr,...) ->
    ...
flow0(..., <<_:10/binary,42:16,_/binary>> = _Ip4Hdr, none = _Ip6Hdr,...) ->
    ...
flow0(..., none = _Ip4Hdr, <<_:4,0:6,_/bits>> = _Ip6Hdr,...) ->
    ...
flow0(..., none = _Ip4Hdr, <<_:10,0:2,_/bits>> = _Ip6Hdr,...) ->
    ...
flow0(..., none = _Ip4Hdr, <<_:6/binary,42:16,_/binary>> = _Ip6Hdr,...) ->
    ...
```

6 OFPXMT_OFB_IPV4_SRC, OFPXMT_OFB_IPV4_DST

```
flow0(..., <<_:12/binary,1,2,3,4,_/binary>> = _Ip4Hdr,...) ->
    ...
flow0(..., <<_:16/binary,1,2,3,4,_/binary>> = _Ip4Hdr,...) ->
    ...
```

7 OFPXMT_OFB_TCP_SRC, OFPXMT_OFB_TCP_DST

```
flow0(..., <<1,2,_/binary>> = _TcpHdr,...) ->
    ...
flow0(..., <<_,_,1,2,_/binary>> = _TcpHdr,...) ->
    ...
```

8 OFPXMT_OFB_UDP_SRC, OFPXMT_OFB_UDP_DST

```
flow0(..., <<1,2,_/binary>> = _UdpHdr,...) ->
    ...
flow0(..., <<_,_,1,2,_/binary>> = _UdpHdr,...) ->
    ...
```

9 OFPXMT_OFB_SCTP_SRC, OFPXMT_OFB_SCTP_DST

```
flow0(..., <<1,2,_/binary>> = _SctpHdr,...) ->
    ...
flow0(..., <<_,_,1,2,_/binary>> = _SctpHdr,...) ->
    ...
```

10 OFPXMT_OFB_ICMPV4_TYPE, OFPXMT_OFB_ICMPV4_CODE

```
flow0(..., <<42,_/binary>> = _IcmpHdr,...) ->
    ...
flow0(..., <<_,42,_/binary>> = _IcmpHdr,...) ->
    ...
```

11 OFPXMT_OFB_ARP_OP, OFPXMT_OFB_ARP_SPA, OFPXMT_OFB_ARP_TPA

```
flow0(..., <<_:6/binary,42,_/binary>> = _ArpHdr,...) ->
    ...
flow0(..., <<_:14/binary,1,2,3,4,_/binary>> = _ArpHdr,...) ->
    ...
flow0(..., <<_:24/binary,1,2,3,4,_/binary>> = _ArpHdr,...) ->
    ...
```

12 OFPXMT_OFB_ARP_SHA, OFPXMT_OFB_ARP_THA

```
flow0(..., <<_:8/binary,0,1,2,3,4,5,_/binary>> = _ArpHdr,...) ->
    ...
flow0(..., <<_:18/binary,0,1,2,3,4,5,_/binary>> = _ArpHdr,...) ->
    ...
```

13 OFPXMT_OFB_IPV6_SRC, OFPXMT_OFB_IPV6_DST, OFPXMT_OFB_IPV6_FLABEL

```
flow0(..., <<_:8/binary,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,_/binary>> = _Ip6Hdr,...) ->
    ...
flow0(..., <<_:24/binary,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,_/bianry>> = _Ip6Hdr,...) ->
    ...
```

```
flow0(..., <<_:12,42:20,_/binary>> = _Ip6Hdr,...) -> ...
```

14 OFPXMT_OFB_ICMPV6_TYPE, OFPXMT_OFB_ICMPV6_CODE

```
flow0(..., <<42,_/binary>> = _Icmp6Hdr) ->
    ...
flow0(..., <<_,42,_/binary>> = _Icmp6Hdr) ->
    ...
```

15 OFPXMT_OFB_IPV6_ND_TARGET, OFPXMT_OFB_IPV6_ND_SLL, OFPXMT_OFB_IPV6_ND_TLL

```
flow0(..., <<135,_:7/binary,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,_/binary>> = _Icmp6Hdr) ->
    ...
flow0(..., <<136,_:7/binary,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,_/binary>> = _Icmp6Hdr) ->
    ...
flow0(..., <<135,_/binary>> = _Icmp6Hdr, 42 = _Icmp6OptSll) ->
    ...
flow0(..., <<136,_/binary>> = _Icmp6Hdr, 42 = _Icmp6OptTll) ->
    ...
```

16 OFPXMT_OFB_MPLS_LABEL, OFPXMT_OFB_MPLS_TC, OFPXMT_OFP_MPLS_BOS

```
flow0(..., <<42:20,_/bits>> = _MplsHdr,...) ->
    ...
flow0(..., <<_:20,0:3,_/bits>> = _MplsHdr,...) ->
    ...
flow0(..., <<_:23,0:1,_/binary>> = _MplsHdr,...) ->
    ...
```

TODO: Set pre-requisites for EthType

17 OFPXMT_OFB_PBB_ISID

```
flow0(..., <<_:19/binary,0,1,2,_/binary>> = _EthHdr,...) ->
    ...
```

TODO: Set pre-requisites for EthType

18 OFPXMT_OFB_TUNNEL_ID

```
flow0(..., 42 = _TunId,...) ->
    ...
```

19 OFPXMT_OFB_IPV6_EXTHDR

```
flow0(..., <<1:1,_:1,_:1,_:1,_:1,0:1,_:1,_:1,_:1>> = _Ip6ExtHdr,...) ->
    ...
```

20 OFPXMT_OFB_PBB_UCA

TODO: it must be a one-bit field close to I-SID

21 Matching function arguments

Argument	Type	Description
InPort	N	Input port
InPhyPort	B	Input physical port
Metadata	N	Metadata
EthHdr	B	Ethernet header
Ip4Hdr	B	IP v4 header
Ip6Hdr	B	IP v6 header
TcpHdr	B	TCP header
UdpHdr	B	UDP header
SctpHdr	B	SCTP header
IcmpHdr	B	ICMP header
ArpHdr	B	ARP header
Icmp6Hdr	B	ICMP v6 header
Icmp6OptSll	N	ICMP v6 source link layer option
Icmp6OptTll	N	ICMP v6 target link layer option
MplsHdr	B	MPLS header
TunId	N	Tunnel Id
Ip6ExtHdr	B	IP v6 extension header