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# Packet Register fields Extension

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## 1 Introduction

This document describes an ONF extension for OpenFlow version 1.3.X that defines packet registers fields.

## 2 How it works

A new set of OXM pipeline fields is defined. The packet register fields `OXM_OF_PKT_REG(N)` are used to store temporary values and information alongside the packet through pipeline processing. Each packet register is 64 bit wide and maskable. In most cases, the packet registers can not be matched in tables, i.e. they usually can not be used in the flow entry match structure. They can be used with the *set-field* (see Section Action Structures) and *copy-field* actions (see ONF Extension EXT-320).

A switch may optionally implement any number of packet registers, up to the limit of the OXM format (i.e. 128). Each packet register is identified by its OXM type field. If a switch support packet registers and use contiguous numbering starting at zero, only the supported packet register with the greatest field number needs to be listed in the table feature properties, otherwise all supported packet registers must be individually listed (see Section Table Features Properties). A switch that does not support packet register fields must not include any packet register entry in the table feature properties.

## 3 Packet Register Class ID

The Class ID of this extension is:

`OFPMC_PACKET_REGS = 0x8001`

## 4 Packet Register OXM fields

The `OXM_OF_PKT_REG(N)` OXM types use the following action structure :



```
/* Structure for OXM field output match. */
struct onf_oxm_packet_regs {
    uint32_t    oxm_header;    /* oxm_class = OFPXMC_PACKET_REGS,
                                oxm_field = <N>. */
    uint64_t    value;         /* Packet Register value. */
};
OFP_ASSERT(sizeof(struct onf_oxm_packet_regs) == 12);
```

The `oxm_header` field must be set with class `OFPXMC_PACKET_REGS`, field type *N* and the proper OXM length and mask bit.

The `value` field is the value for the corresponding packet register.