



P4

Programming Protocol-Independent Packet Processors

Structure

- 1.What's P4?
- 2.P4 Language
- 3.Demo
- 4.Q&A

What is P4?

“P4 is a high-level language for programming protocol-independent packet processors”

1.P4 is a language.

2.P4: Protocol-Independent

3.P4 Object: Switches

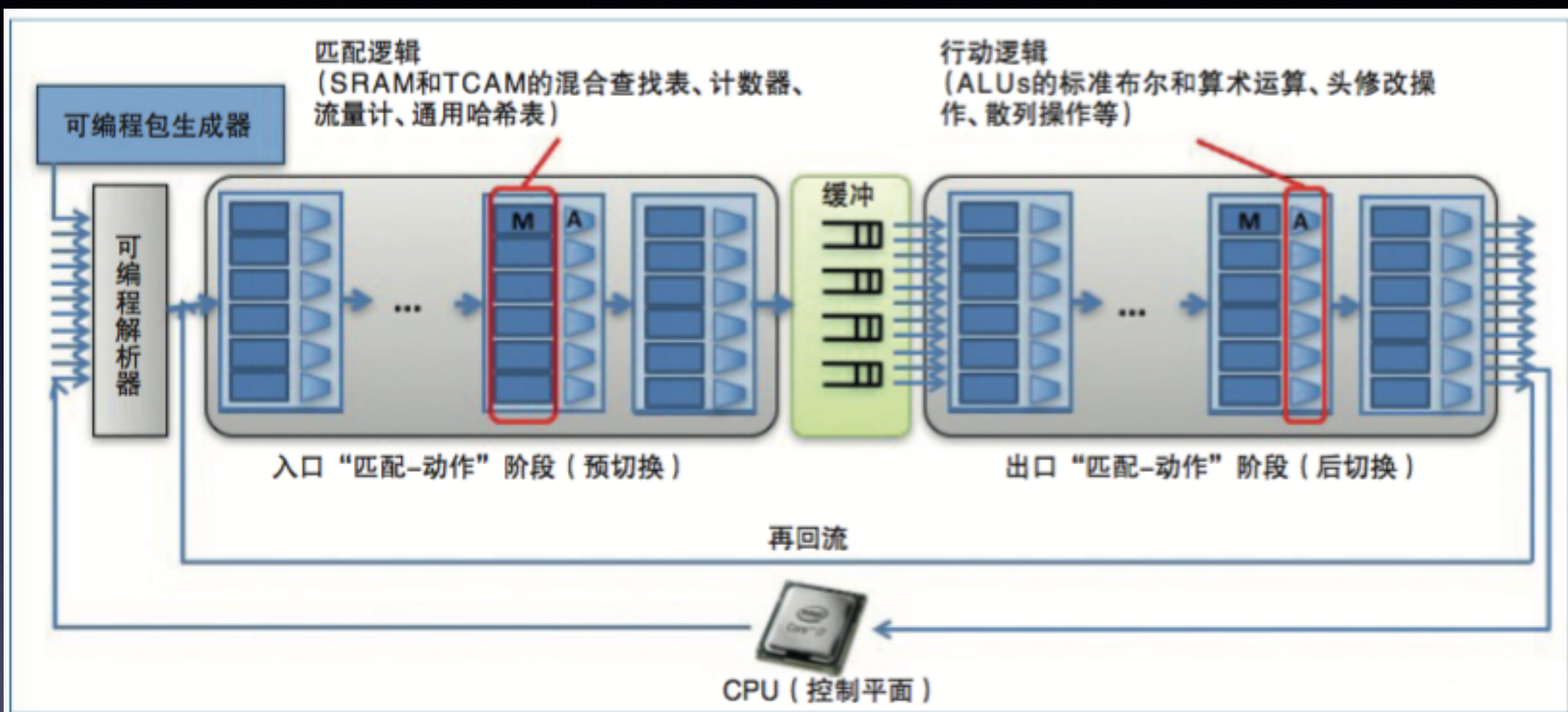


图2 协议无关的交换机架构。到达PISA交换机的数据包先由可编程的解析器解析，再通过入口侧一系列的“匹配-动作”阶段，然后经由队列系统交换，由出口“匹配-动作”阶段再次处理，最后重新组装发送到输出端口

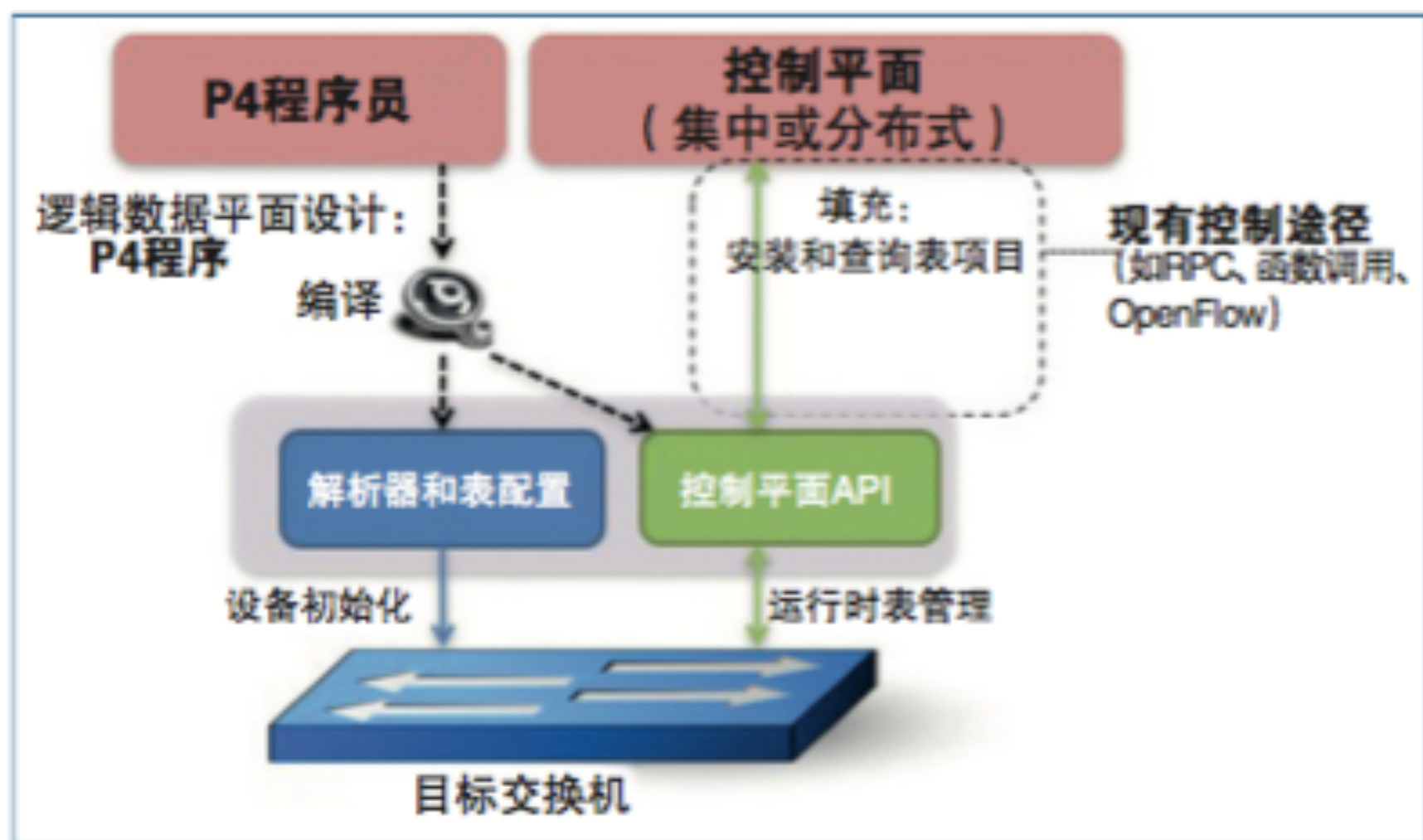


图1 P4是编程交换机数据平面的语言

P4 Language

- **Features:**
 - **1. Protocol Independent**
 - **2. Target Independent**
 - **3. Field Reconfigurable**

- **Components:**
- **1. Header**
- **2. Parser**
- **3. Table (Match)**
- **4. Action**
- **5. Control Program**

- **Header**

```
header_type ethernet_t {  
    fields {  
        dstAddr : 48;  
        srcAddr : 48;  
        etherType : 16;  
    }  
}
```


- **Parser**

```
parser parse_ethernet {  
    extract(ethernet);  
    return select(latest.etherType) {  
        ETHERTYPE_IPV4 : parse_ipv4;  
        default: ingress;  
    }  
}
```


- **Table and Action**

```
table dmac {  
    reads {  
        ethernet.dstAddr : exact;  
    }  
    actions {  
        forward;  
        broadcast;  
    }  
    size : 512;  
}
```


- **Control Program**

```
control ingress {  
    apply(smac);  
    apply(dmac);  
    ecmp_process();  
}
```


Demo

- **Github: <https://github.com/Emil-501>**
- **Mail: cx952693358@vip.qq.com**
- **My Github: <https://github.com/Wasdns>**

Q&A

Thank you!