

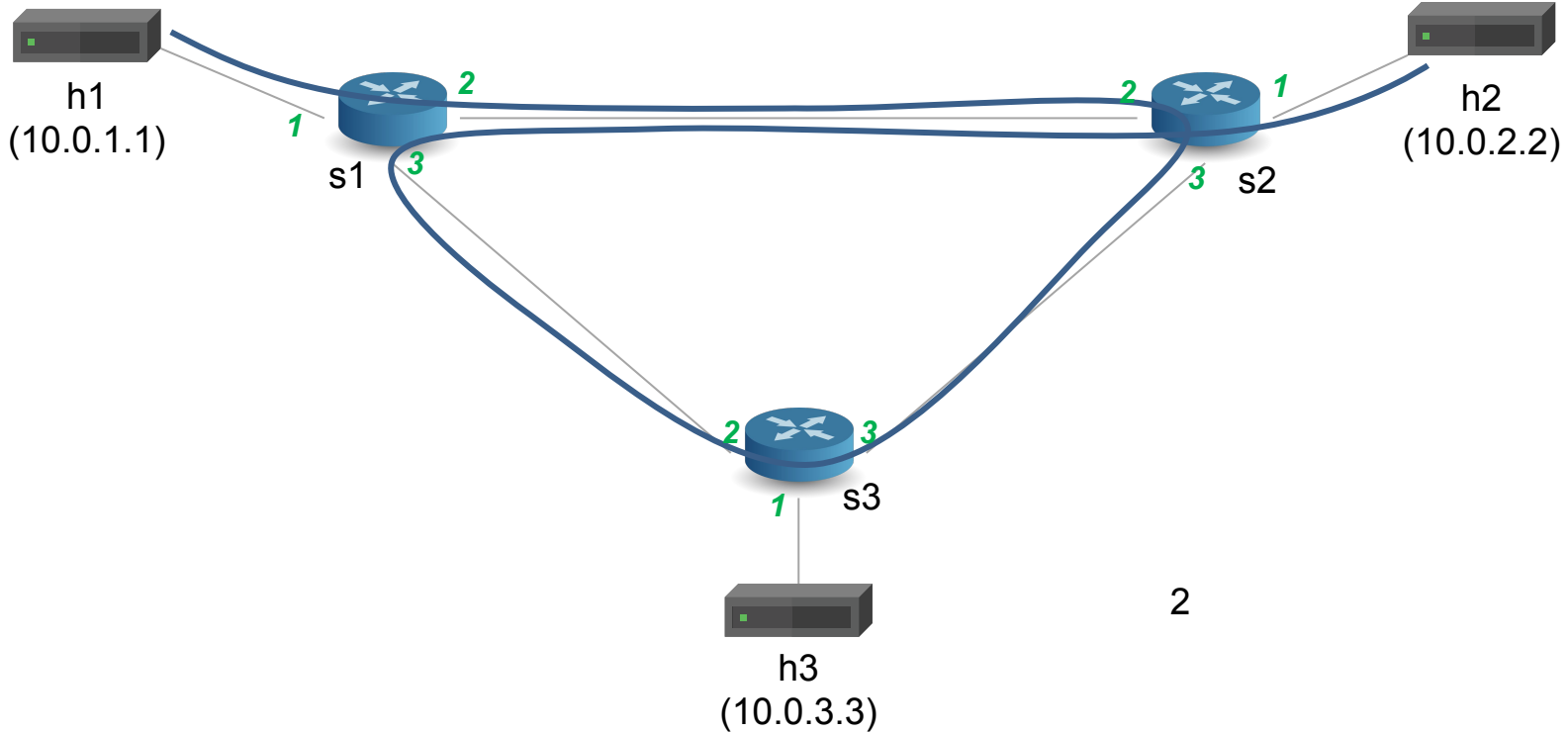
# Lab 4: Advanced Data Structures

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# Source Routing

2,3,2,2,1, {payload}



# Source Routing: Packet Format

```
#define MAX_HOPS 9

const bit<16> TYPE_IPV4 = 0x800;
const bit<16> TYPE_SRCROUTING = 0x1234;
header srcRoute_t {
    bit<1>    bos;
    bit<15>   port;
}

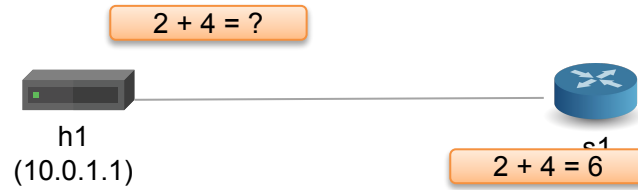
struct headers {
    ethernet_t          ethernet;
    srcRoute_t[MAX_HOPS] srcRoutes;
    ipv4_t              ipv4;
}
```

- Parse source routes only if etherType is 0x1234
- The special value bos == 1 indicates the “bottom of stack”
- Forward packets using source routes, and also decrement IPv4 TTL
- Drop the packet if source routes are not valid
- Hint: Use the next, pop\_front primitives  
packet.extract(hdr.srcRoutes.next)  
hdr.srcRoutes.pop\_front(1)



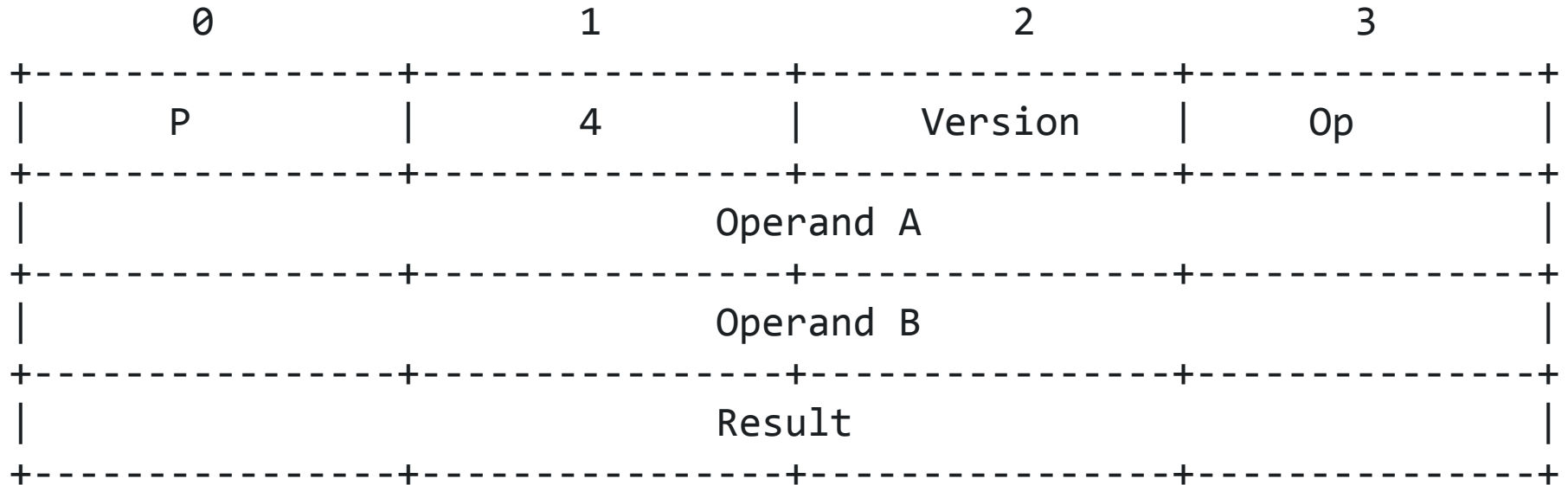
# Calculator

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# Calculator: Packet Format

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# Table Initializers

```
table tbl {  
  key = { hdr.h.f : exact }  
  actions = { a1; a2; a3 }  
  entries = {  
    { 0x01 } : a1(1);  
    { 0x02 } : a1(2);  
    { _ } : NoAction();  
  }  
}
```

**Can initialize tables with constant entries**

**Must fully specify the value of all action data, including values that are normally supplied by the control-plane**

**Hint: for the calculator, use a table that matches on the op-code**



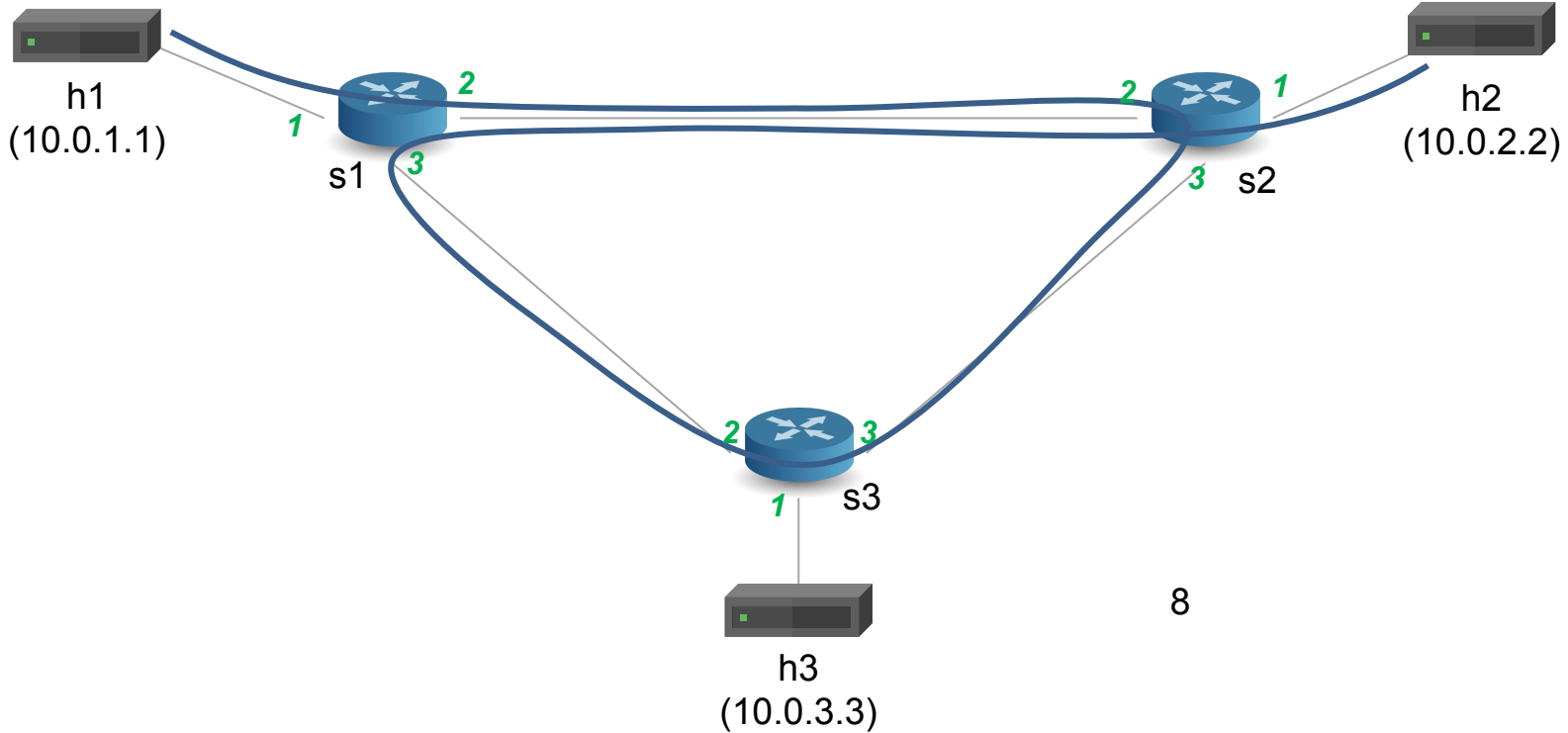
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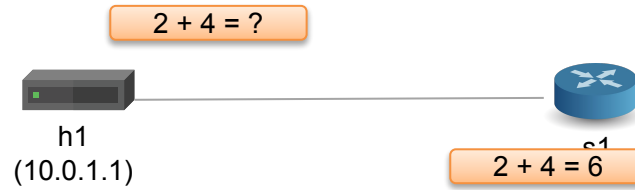
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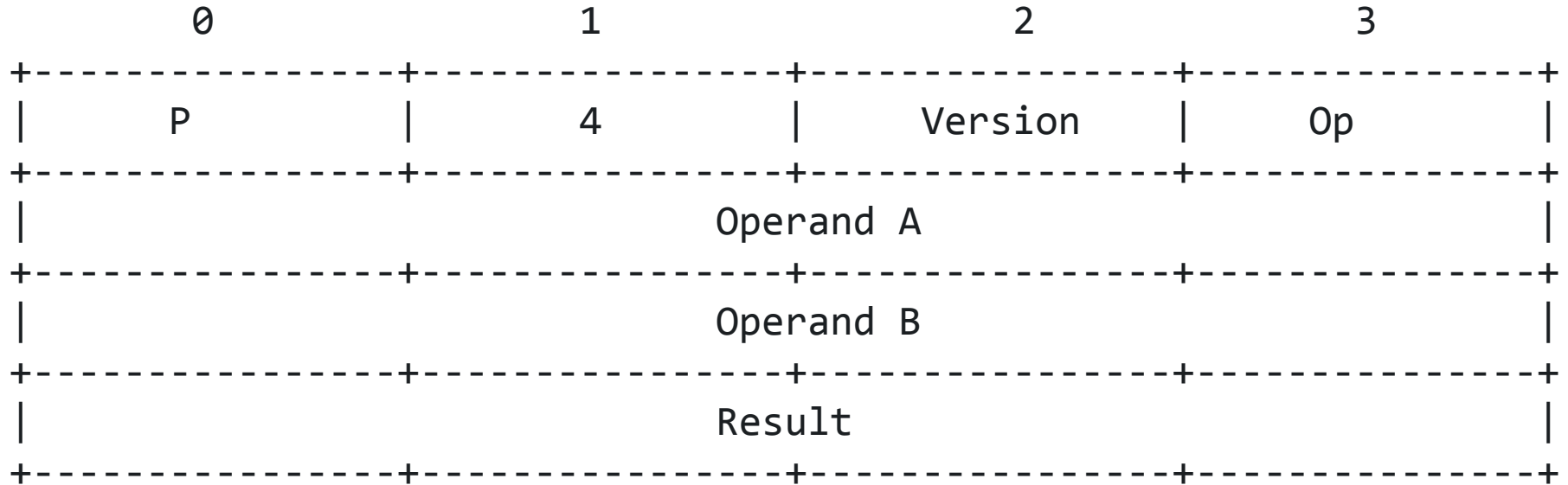
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