



Traffic Sampling-on-Demand on P4 Capable Switch

What is P4?

P4 is a programming open-source language designed to allow programming of packet data planes. It is maintained by a non-profit organization called the P4 Language Consortium.

```
table routing {
  key = { ipv4.dstAddr : lpm; }
  actions = { drop; route; }
  size : 2048;
}
control ingress() {
  apply {
    routing.apply();
  }
}
```

Why P4?

Protocol Independent

P4 programs specify how a switch processes packets.

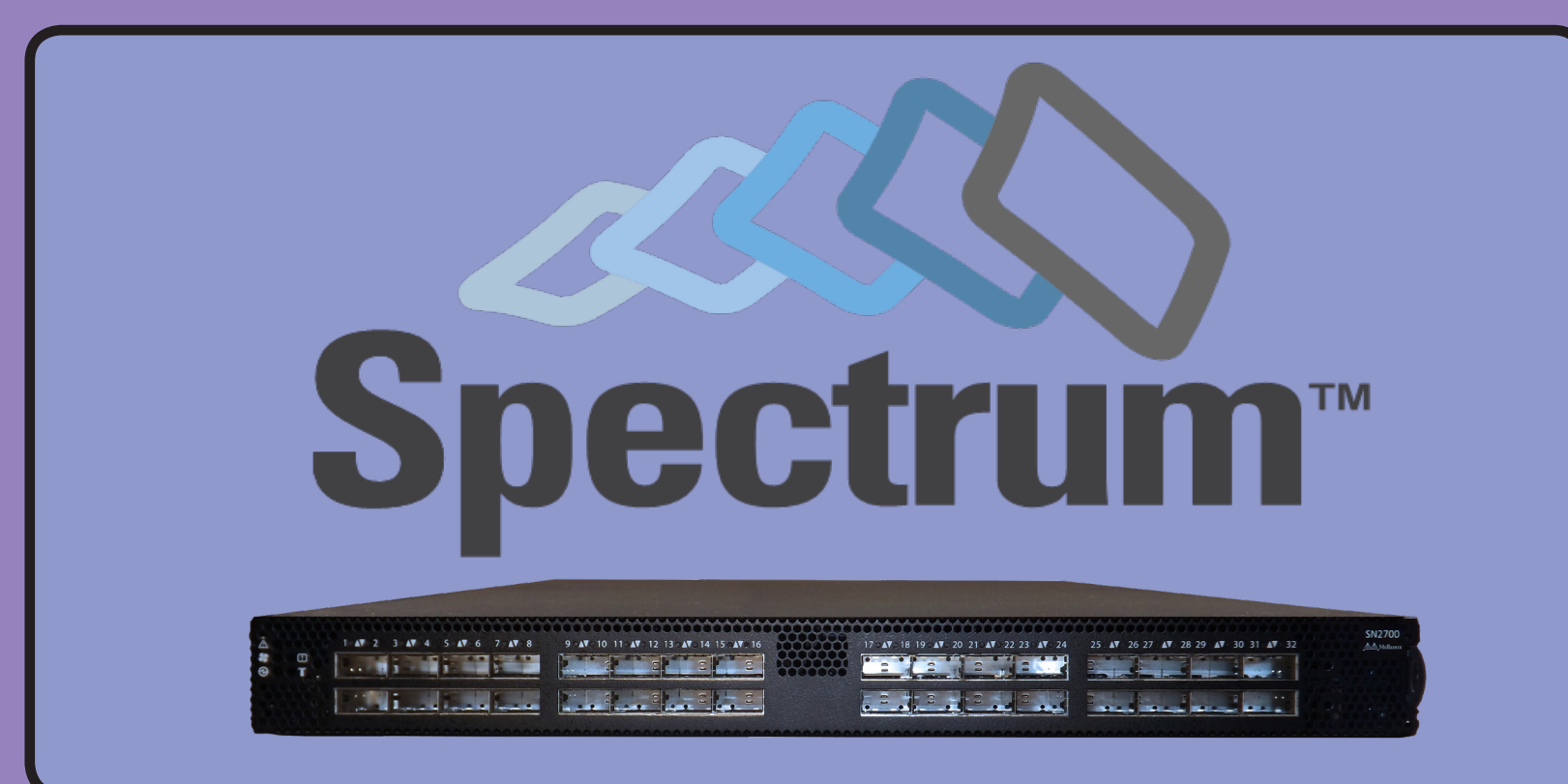
Target Independent

P4 is suitable for describing everything from high-performance forwarding ASICs to software switches.

Field Reconfigurable

P4 allows network engineers to change the way their switches process packets after they are deployed.

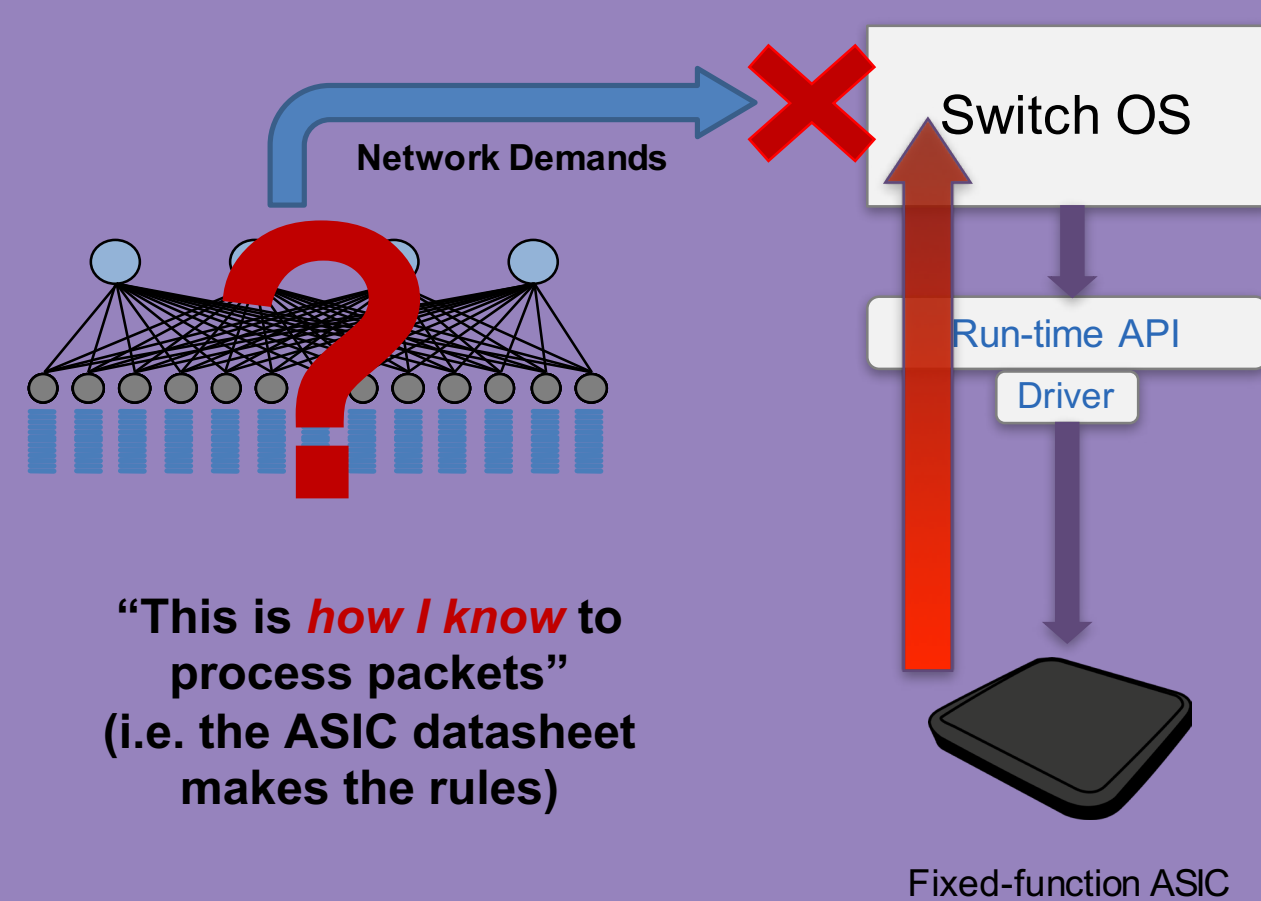
The following functionality is implemented on P4 capable Mellanox Switch.



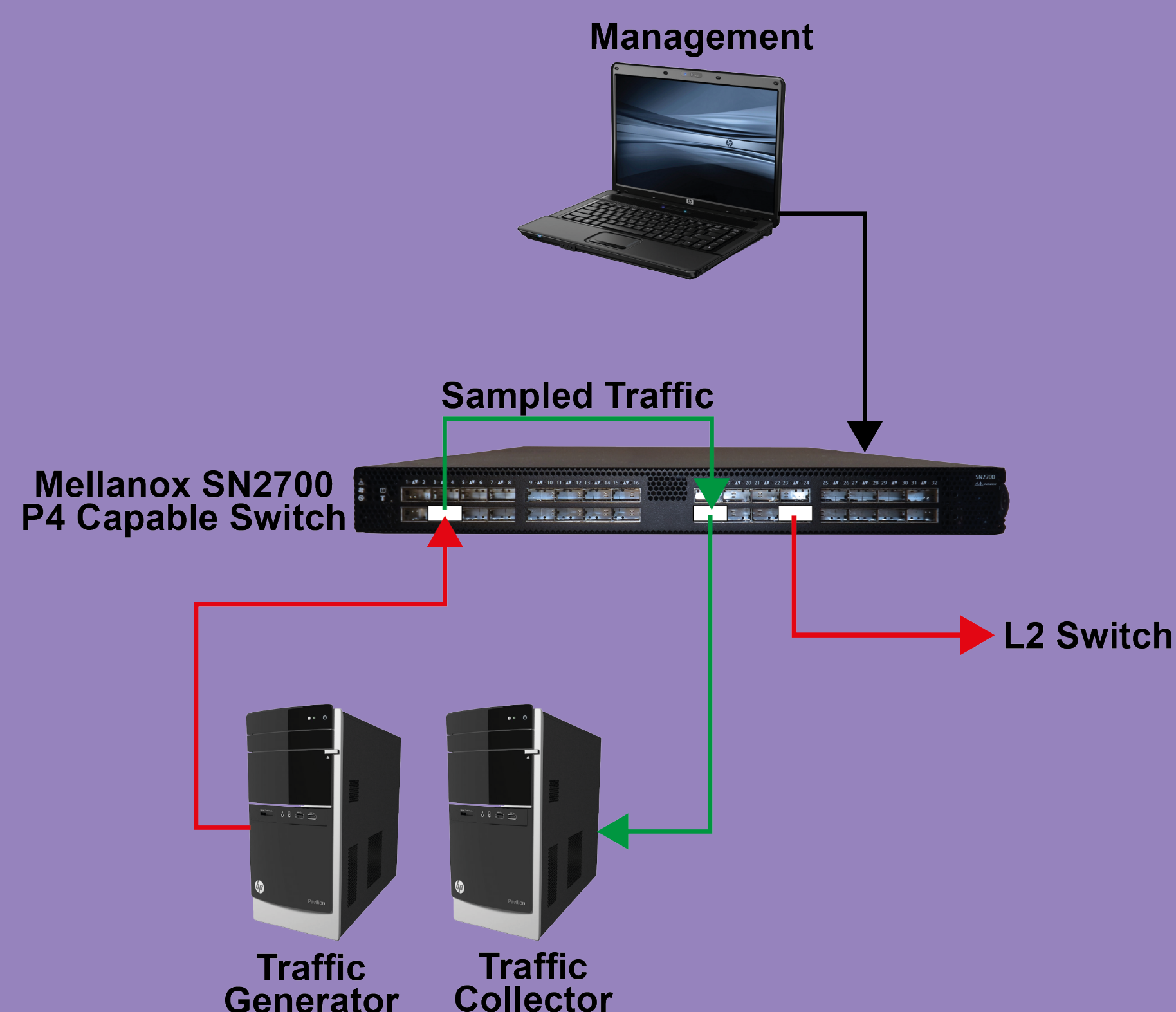
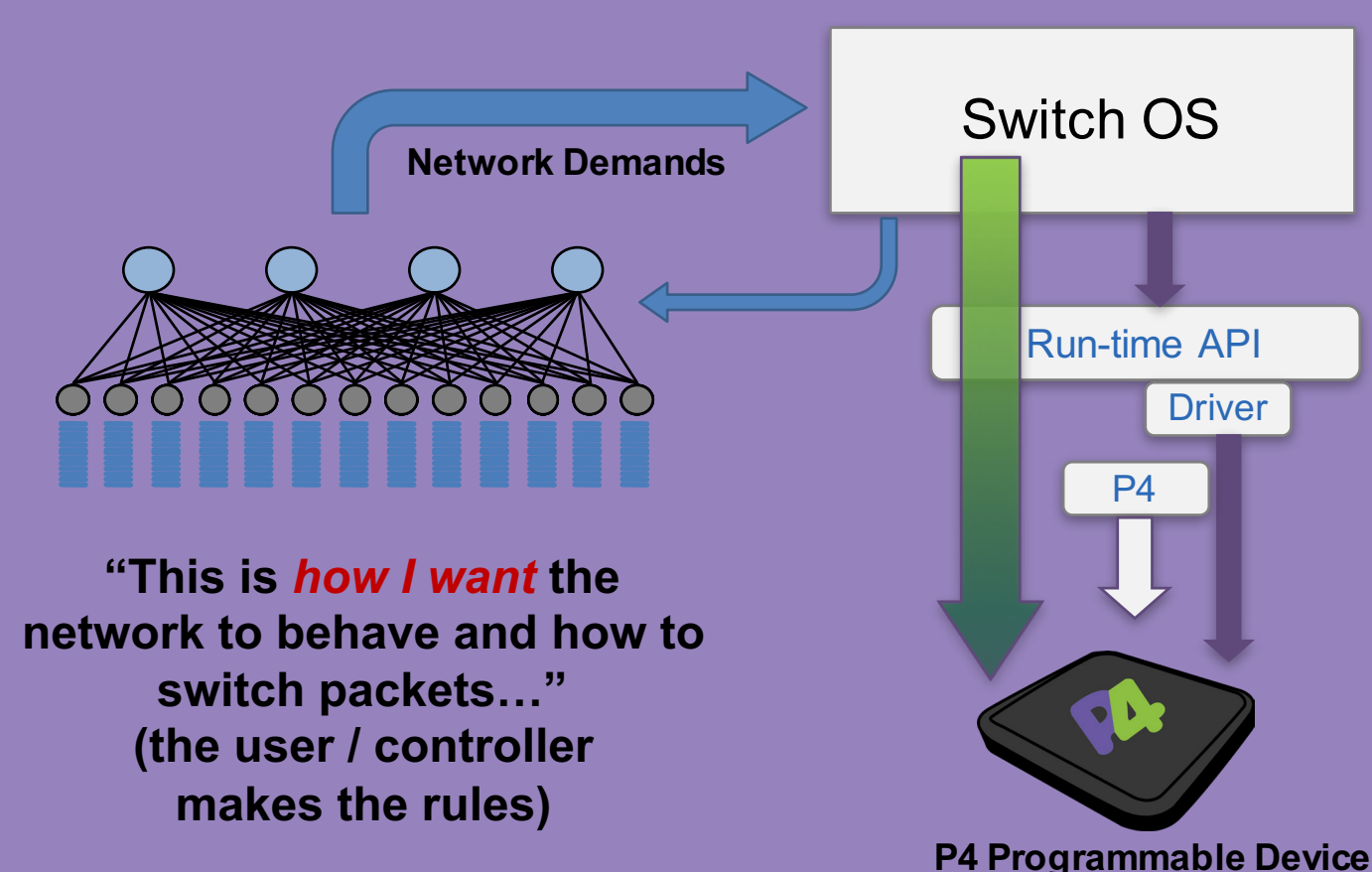
Sampling-On-Demand

Network monitoring plays a significant role in network management. It is used for a variety of applications such as QOS, billing, traffic engineering, security and anomaly detection. While some of these applications require only flow statistics, many require more specific packet-level information. This requirement is fulfilled by having the network switches copy a fraction of the packets of specific flows and forward these packets to a monitoring device for further analysis. This process is known as sampling.

Status Quo: Bottom-up design



A Better Approach: Top-down design



GRE tunneling

Generic Routing Encapsulation (GRE) is a tunneling protocol that can encapsulate a wide variety of network layer protocols inside virtual point-to-point links or point-to-multipoint links over an IP network.