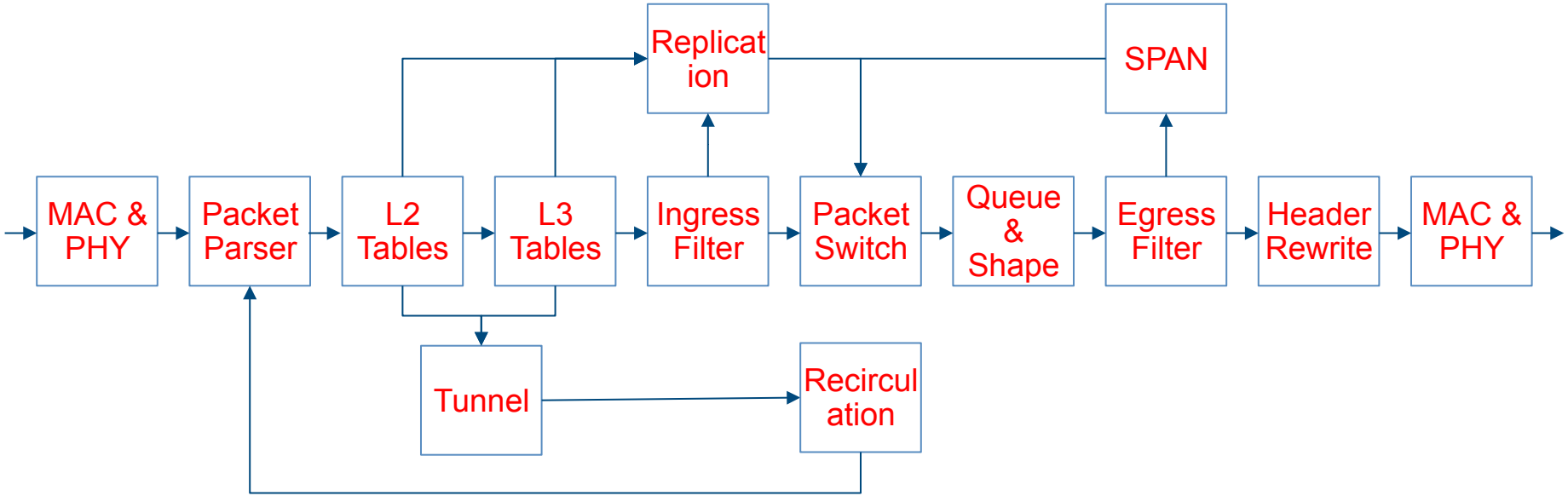
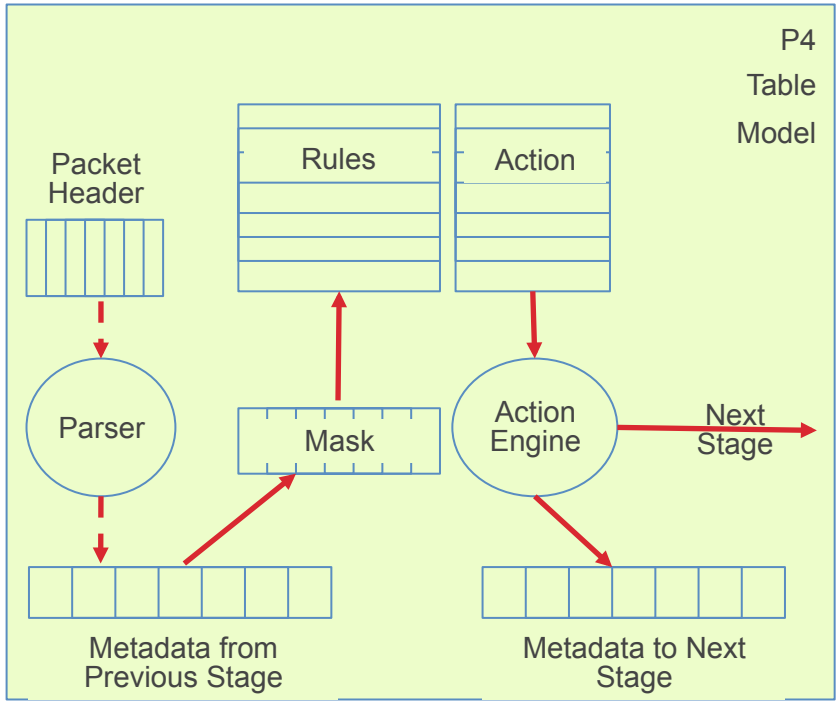
P4

June 4th 2015

Data Path Model



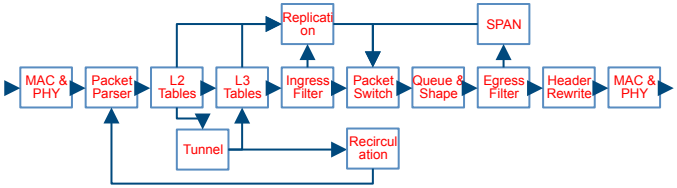
P4: A networking datapath language



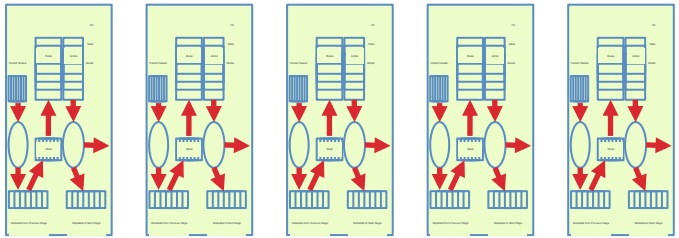
- **P4 provides a formal language for specifying networking data-path functionality**
- **Using P4 and corresponding tools, packet processing pipeline can be reprogrammed.**


Clarity
Portability
Simulate
P4?
Product Lifetime
Visibility
Innovate

OCP - P4 model companion for SAI



OCP Specified SAI API



Silicon Realization

Application Model of the Data Plane

P4 specified Data plane model

Silicon Implementation of the Data Plane

- SAI (Switching Abstractions Interface) is an OCP API that expresses common/well-known forwarding abstractions.
  - used by upper-layer networking applications (protocols, monitoring, et.al.) to configure forwarding state
  - Hides differences in silicon implementations by providing a common interface.
  - Traction from all major silicon vendors, as well as networking application writers.
- P4 can be used to _define_ how these switching abstractions actually function in data-plane
  - This removes any semantic ambiguity around these “well-known abstractions”
- Can we standardize on SAI.p4 and derive the APIs through tools?

Experience with P4 & Next Steps

Crawl

Solve Simple Problems

- Was able to demonstrate simple “Tunnel Splicing” example in a matter of weeks of getting started
- Was easy to do incremental development by making minor changes to templates

Walk

Solve Real-world problems

- Work with Universities to create innovative PoCs.
- Ensure that the language is complete for the intended use
- Create products with right P4 target silicon.

Run

Get Industry Engagement & Support

- Differentiated Features with P4 enabled Devices.

Thank You