

The OpenFlow Switch

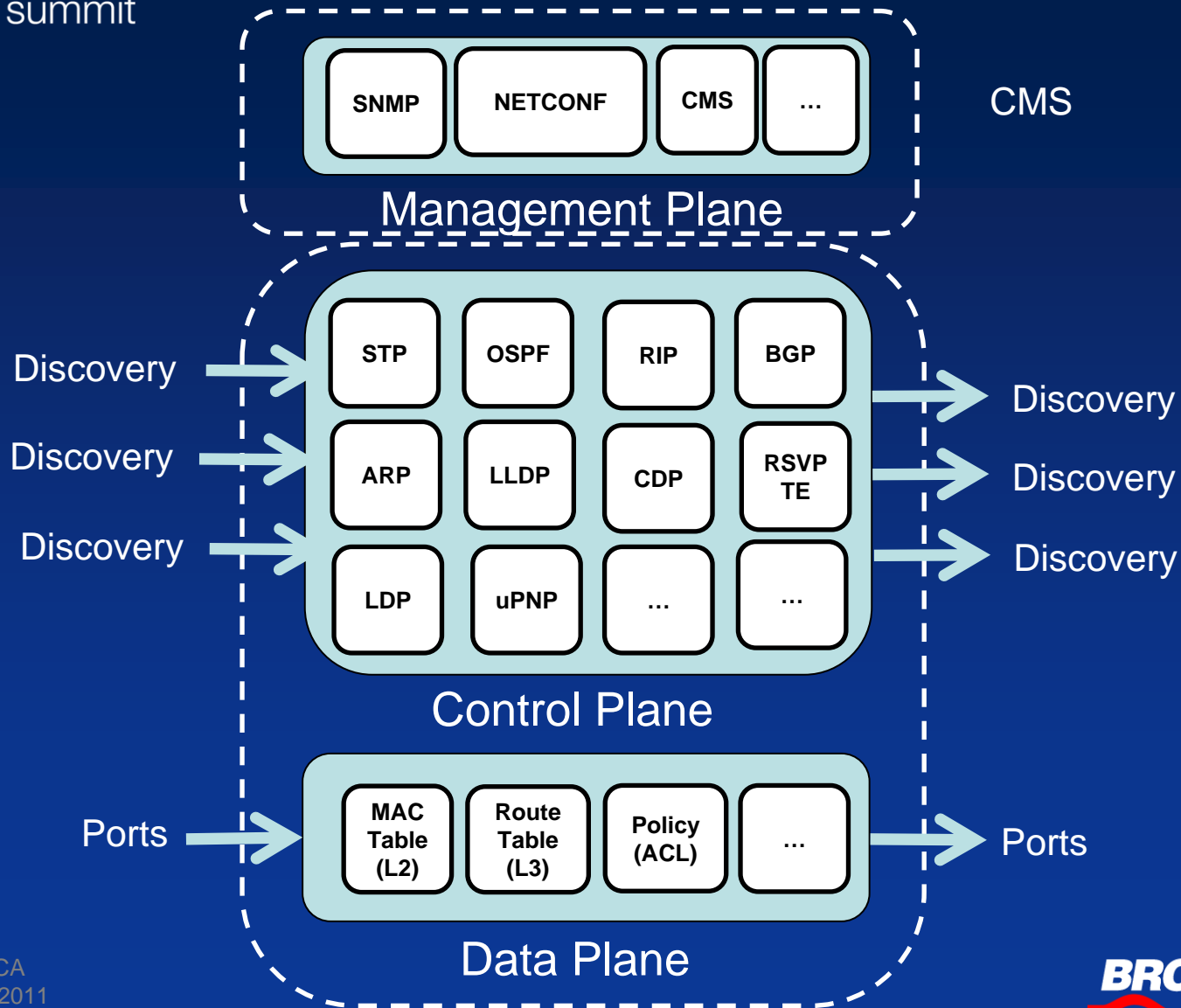
Supporting OpenFlow at the Chip Level

Joseph Tardo, Broadcom Corporation

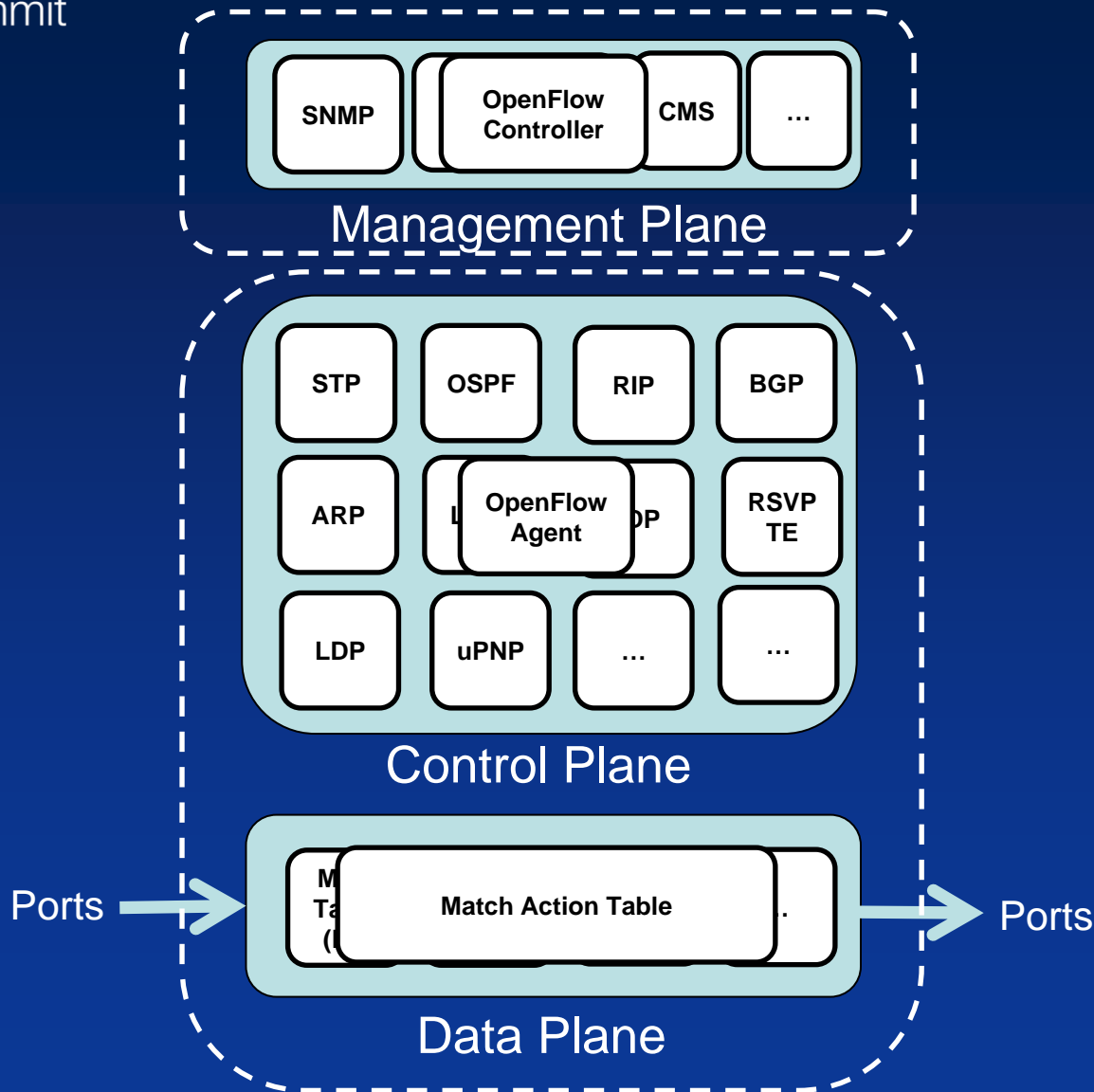
What is an OpenFlow Switch?

- What's in a Switch?
- What's Different in an OpenFlow Switch?
- What Changes in the ASIC?

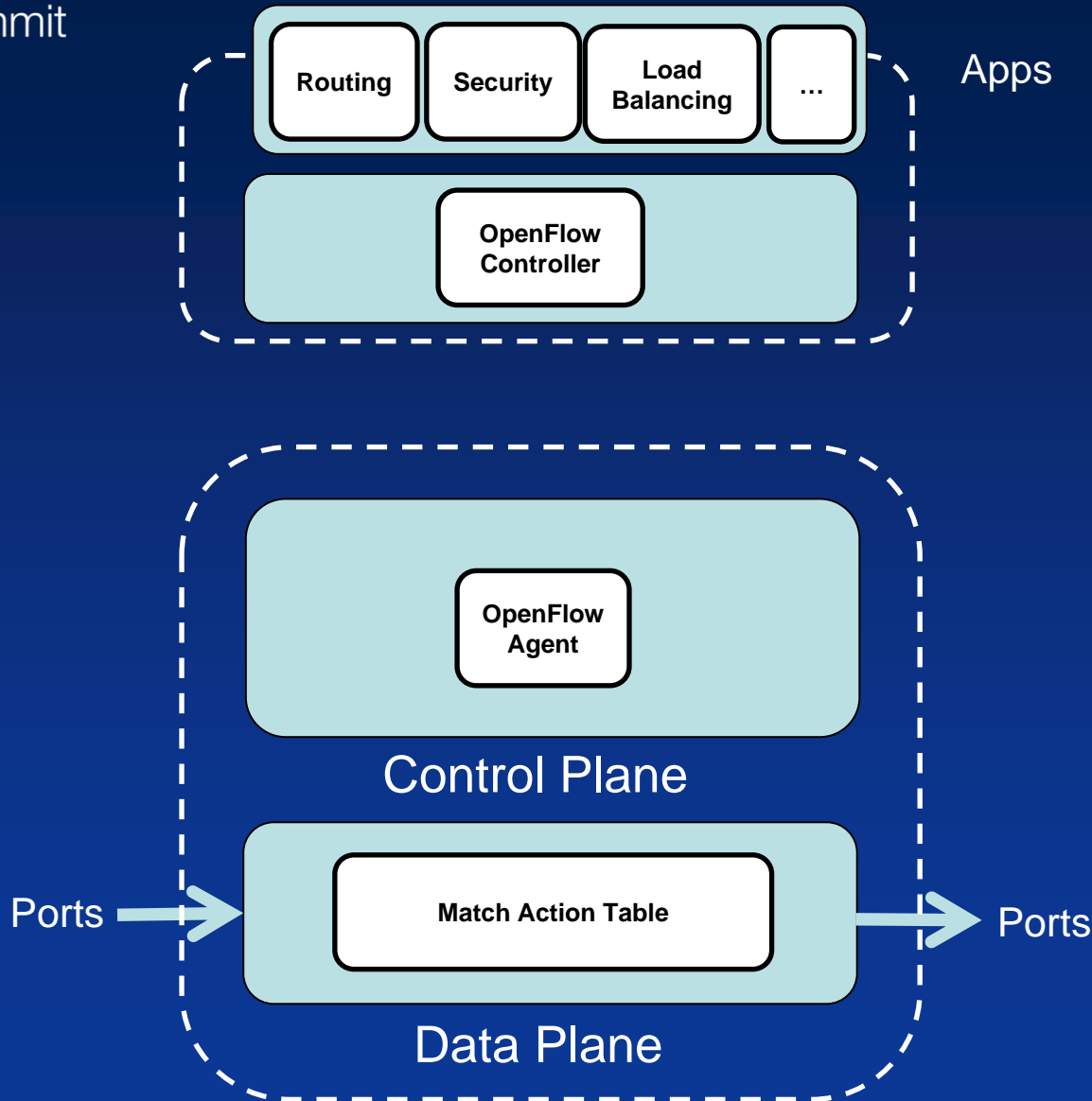
Anatomy of a Switch



What's in an OpenFlow Switch?



Intelligence Moves to Controller



Is That All There Is To It?

- Not Really
- There's the Hybrid Switch
 - OpenFlow 1.0 LOCAL action
 - Physically shared "transition" network
- And OpenFlow 1.1
 - Multiple Tables
 - Tags and Labels

What About the ASIC?

- Today - Support OpenFlow Using TCAMs
 - Match-action-table = ACL
 - OK for OpenFlow 1.0, less so for OpenFlow 1.1
- Today – Need Hybrid Switches
 - OpenFlow hardware partition
 - Still need a normal forwarding partition
- Bottom Line – Not Fundamentally Different (Yet)
 - Leverage what is already there for OpenFlow
 - Big difference is in control plane software

Where is OpenFlow Going?

- Open Networking Foundation
 - “Industrial Strength” OpenFlow: OF 1.1 + IPv6
 - Add Configuration and Testing
- OpenFlow 2.0 is Next
 - Needs to use more of switch
 - Needs to specify hybrid mode, tunneling, etc.
- ASICs will Evolve to Support

What is Broadcom Doing?

- Three Generations of Support for OpenFlow
 - Engaged with Stanford since 2006
- Indigo Reference Code on Request
 - Stanford OpenFlow Switch on Pronto Platforms
 - Has enabled multiple OpenFlow research projects
- Engaged With Leading OEMs
 - Data Center, Enterprise, Carrier Networks

Thank You