

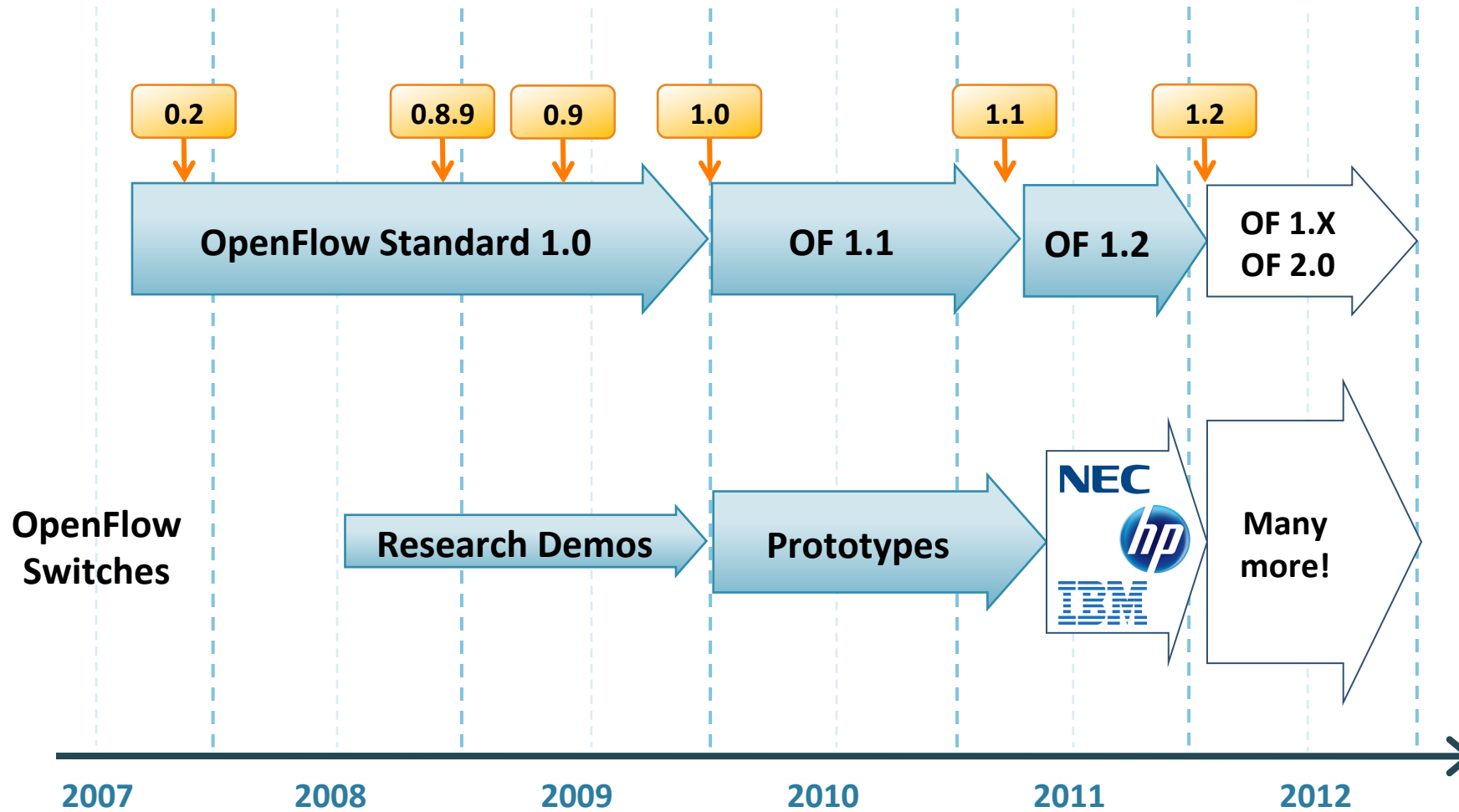
# Opening Up Your Network with SDN

Guido Appenzeller  
Big Switch Networks

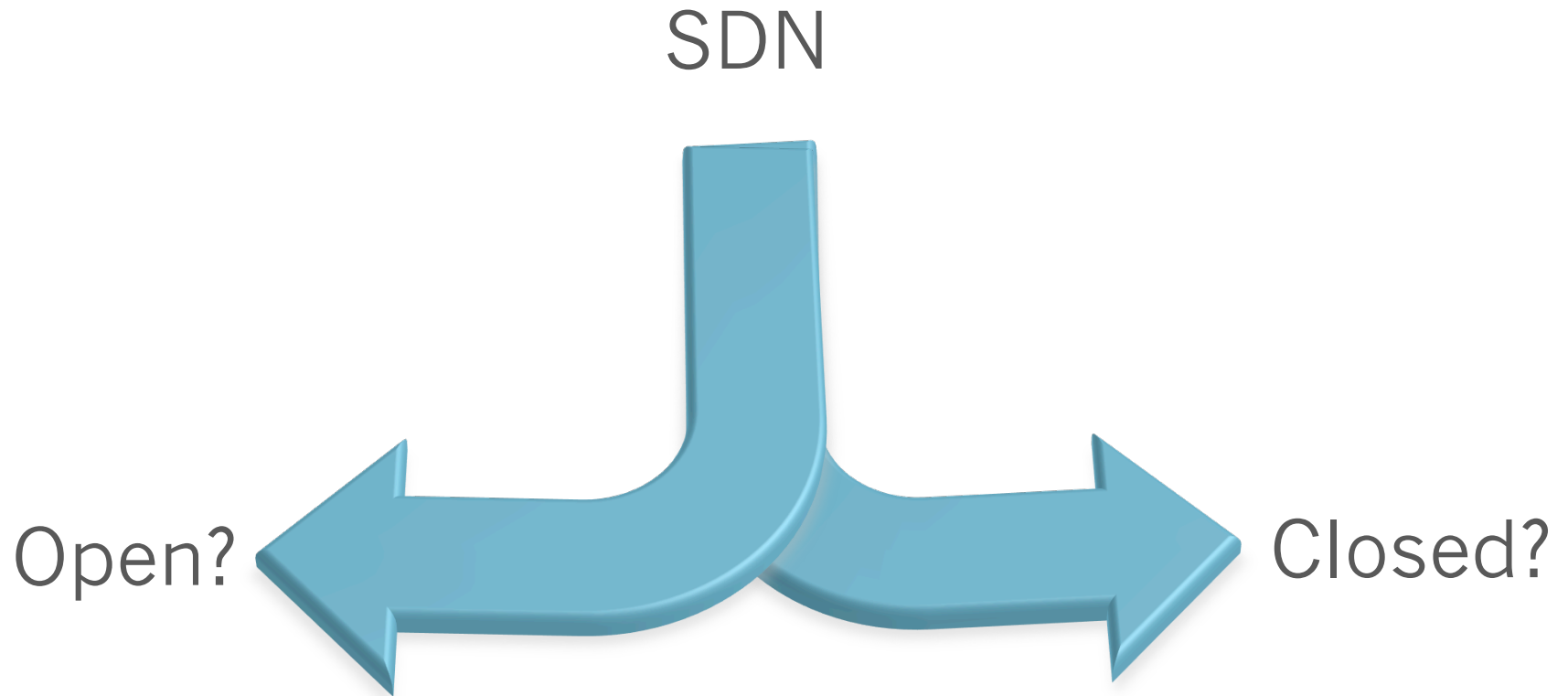


# SDN/OPENFLOW ECOSYSTEM

## Timeline



# Software defined Networking at a Crossroads



# Why does this matter?



# What is Software Defined Networking?



Wikipedia Definition:

*„A network architecture in which the network control plane is decoupled from the physical topology.”*

What a network administrator hears:



- (Yet) another vendor in your mission critical network
- If this system (the SDN controller) goes down, so does the entire network
- You carry all the integration risk
- Did I mention this is brand new technology?

# More “features” of SDN...

- SDN allows you to write your own control plane
  - Is this attractive for organizations deploying SDN?
  - Are customers going to write their own?
    - They won't. It's very difficult, requires a large engineering team with diverse skills.



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COURTESY: GOOGLE

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    - Sufficient economies of scale may exist for Hyperscale Data Centers and certain very specialized applications





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    - In-house development unattractive for most Enterprises
    - Sufficient economies of scale may exist for Hyperscale Data Centers and certain very specialized applications
- If you buy a closed control plane from a single vendor, what have you gained?
  - Easier for vendors to deliver certain applications
    - Example: Network Virtualization. All modern implementations (that I am aware of) use a centralized control plane.



So why is SDN being  
adopted?



# Open SDN

- The thing that changes this value prop is SDN being open
- SDN is not about writing your own control plane.
  - That's hard.
  - Few will do it.
- Instead this is mostly about integration
  - You don't need to write your own
  - Build your own (lightweight) apps on an existing control plane
  - Modify existing Open Source Controller
  - Mix and Match Applications

# Three Examples

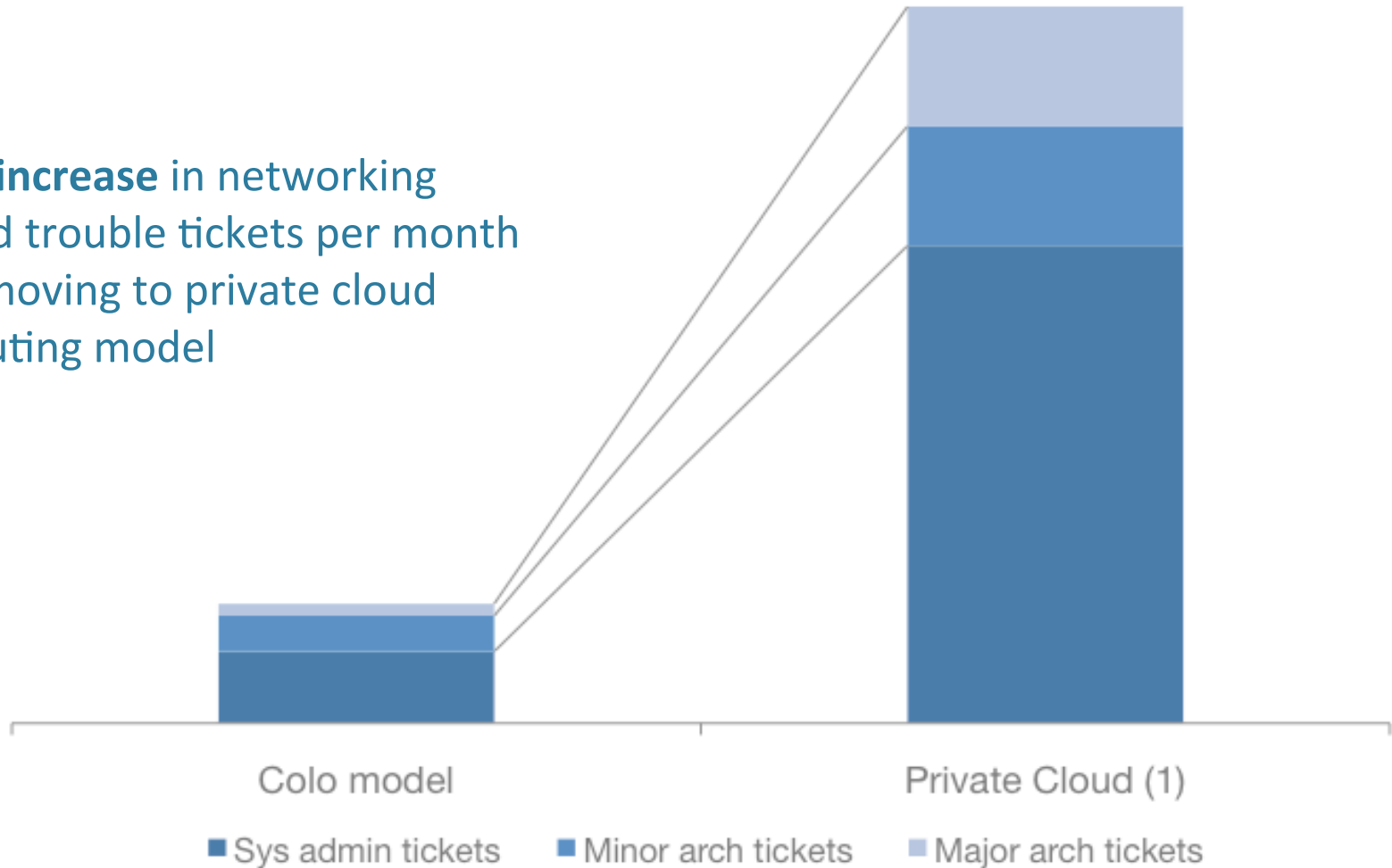
- Private Cloud
- vArmour
- vSwitch/ToR Integration



# Networking and Server Virtualization

The hidden headaches of moving to a private cloud

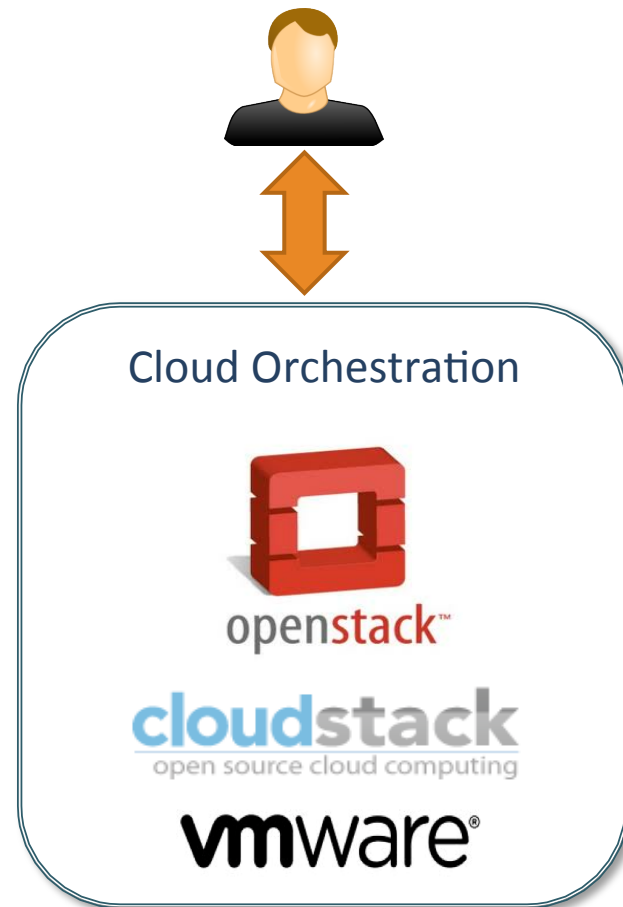
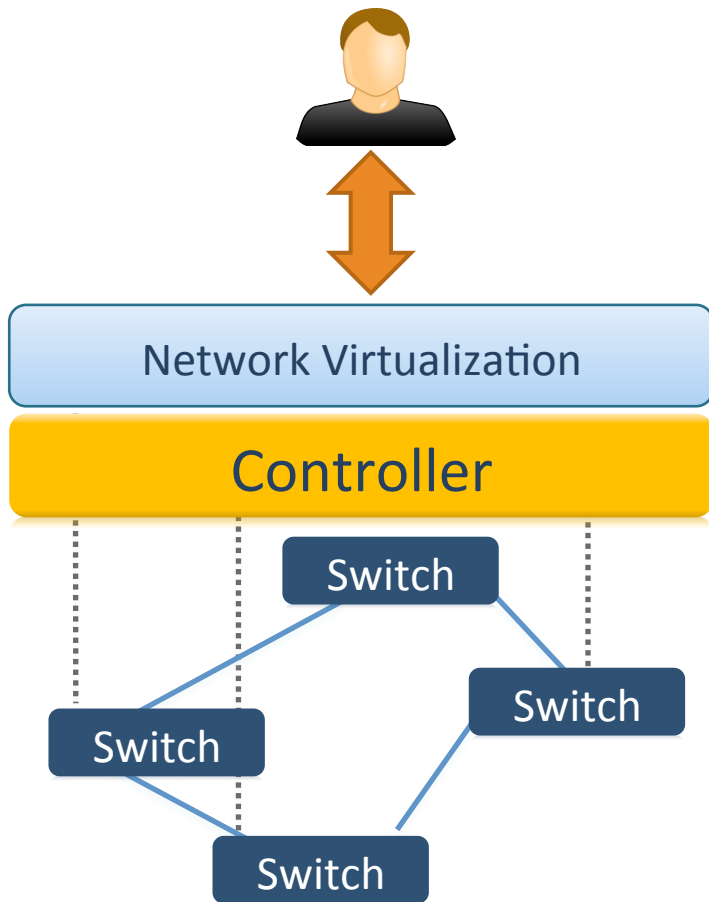
~3-6x increase in networking related trouble tickets per month after moving to private cloud computing model



Source: team estimates based on interviews across 8 enterprise and university network professionals in planning, pilots or production with private cloud architectures

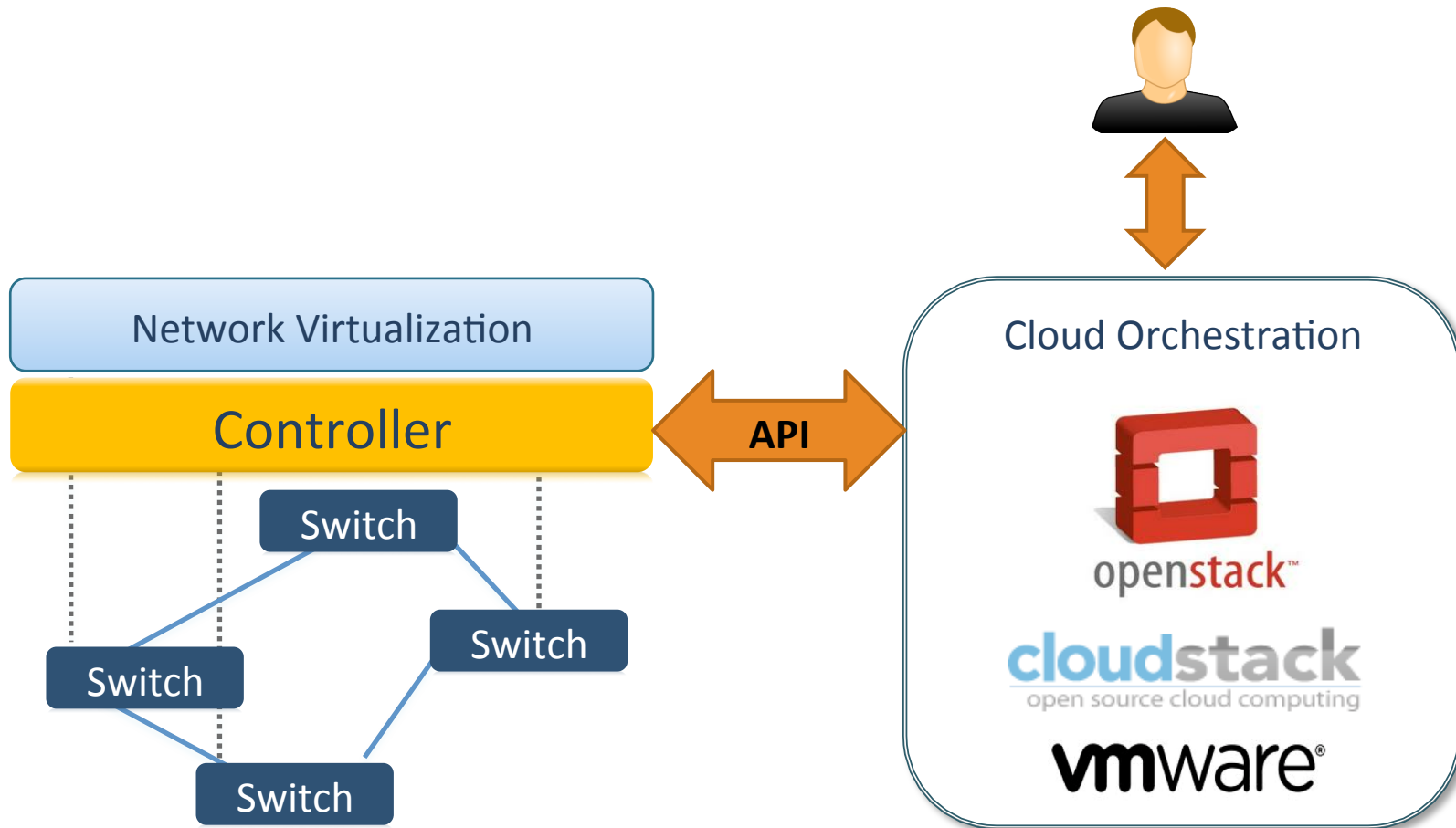
# Example 1: Private Cloud

Separate administration has little benefit



# Example 1: Private Cloud

Open API enables automation

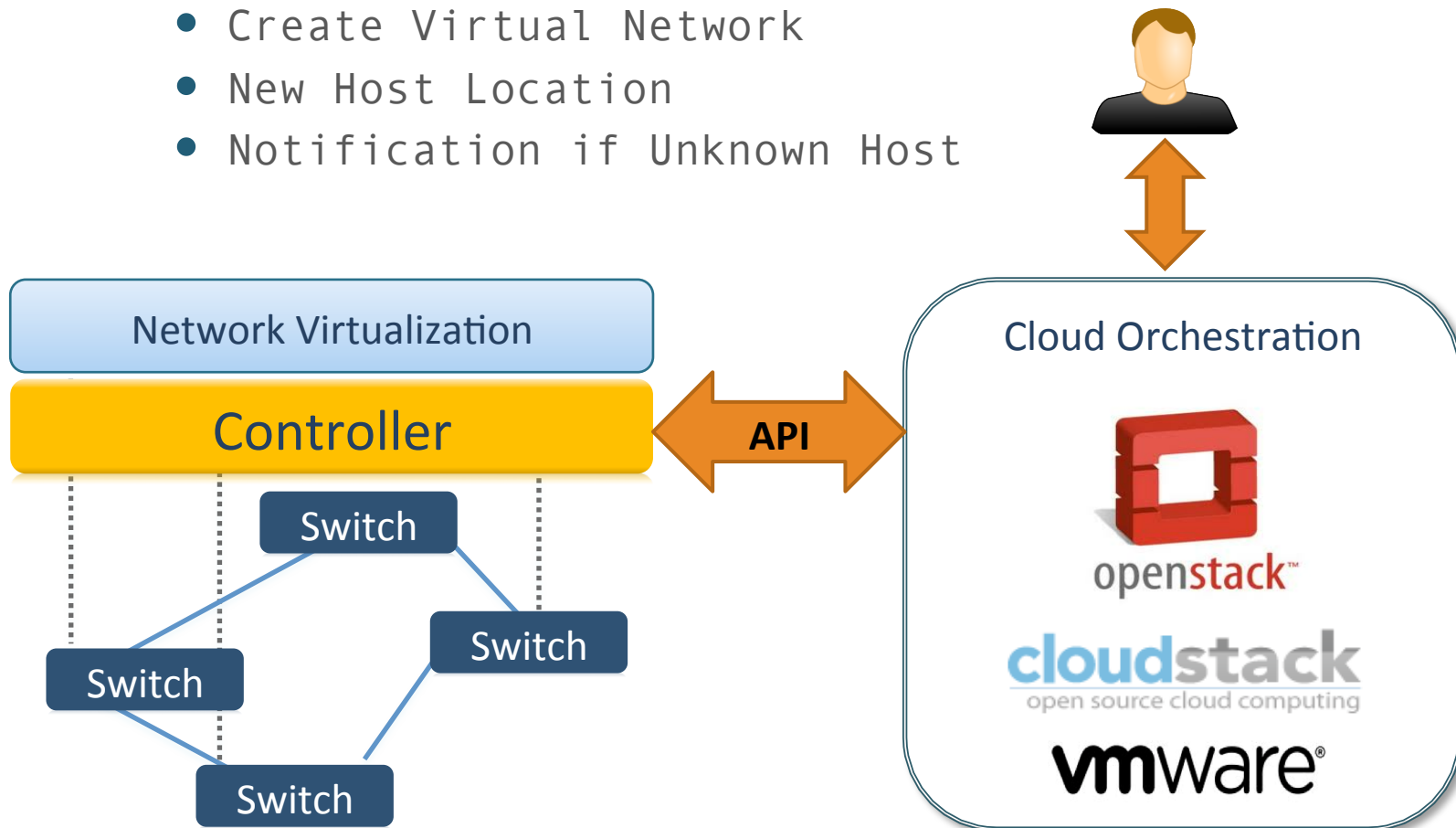


# Example 1: Private Cloud

Open API enables automation

Sample API Calls:

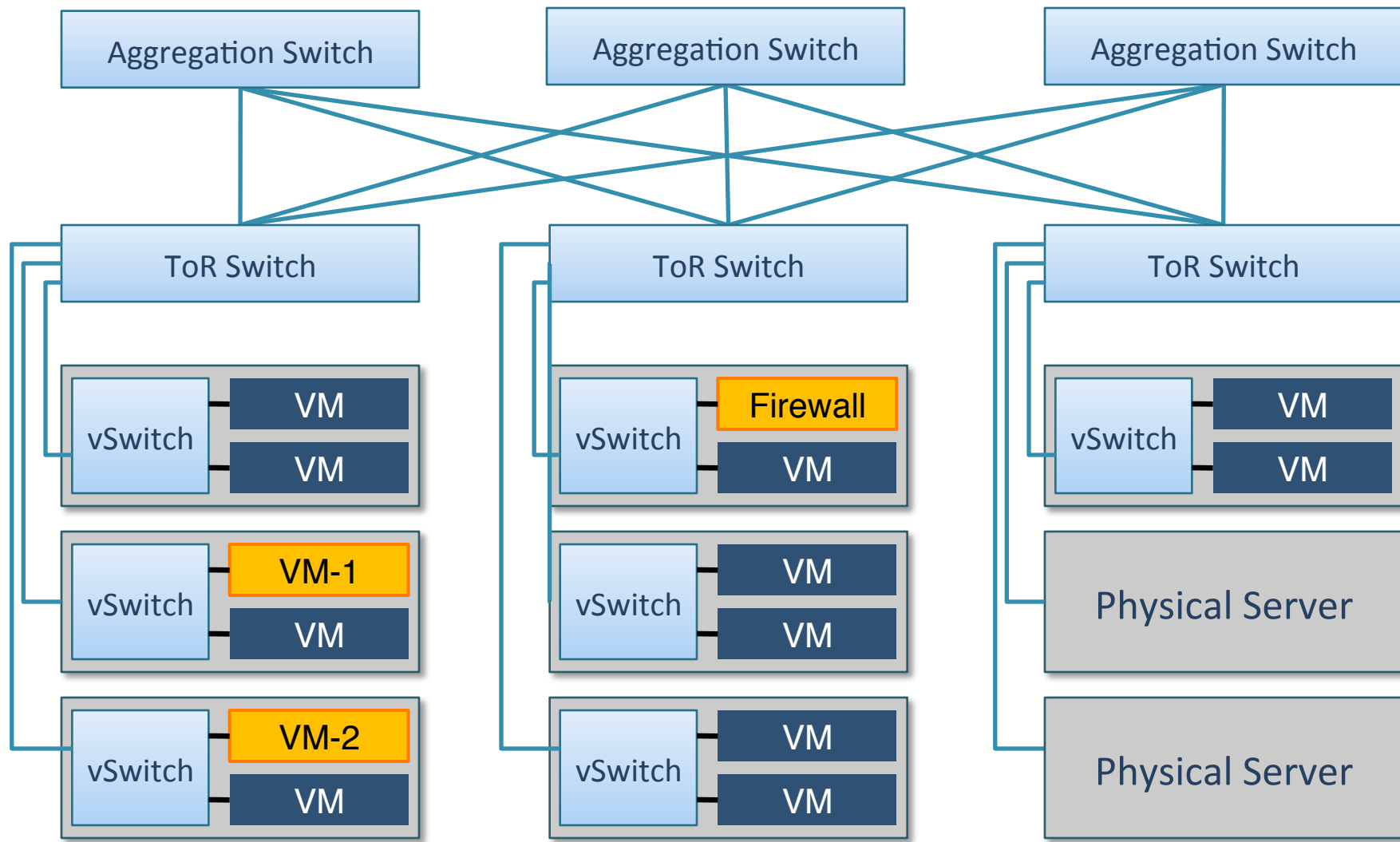
- Create Virtual Network
- New Host Location
- Notification if Unknown Host





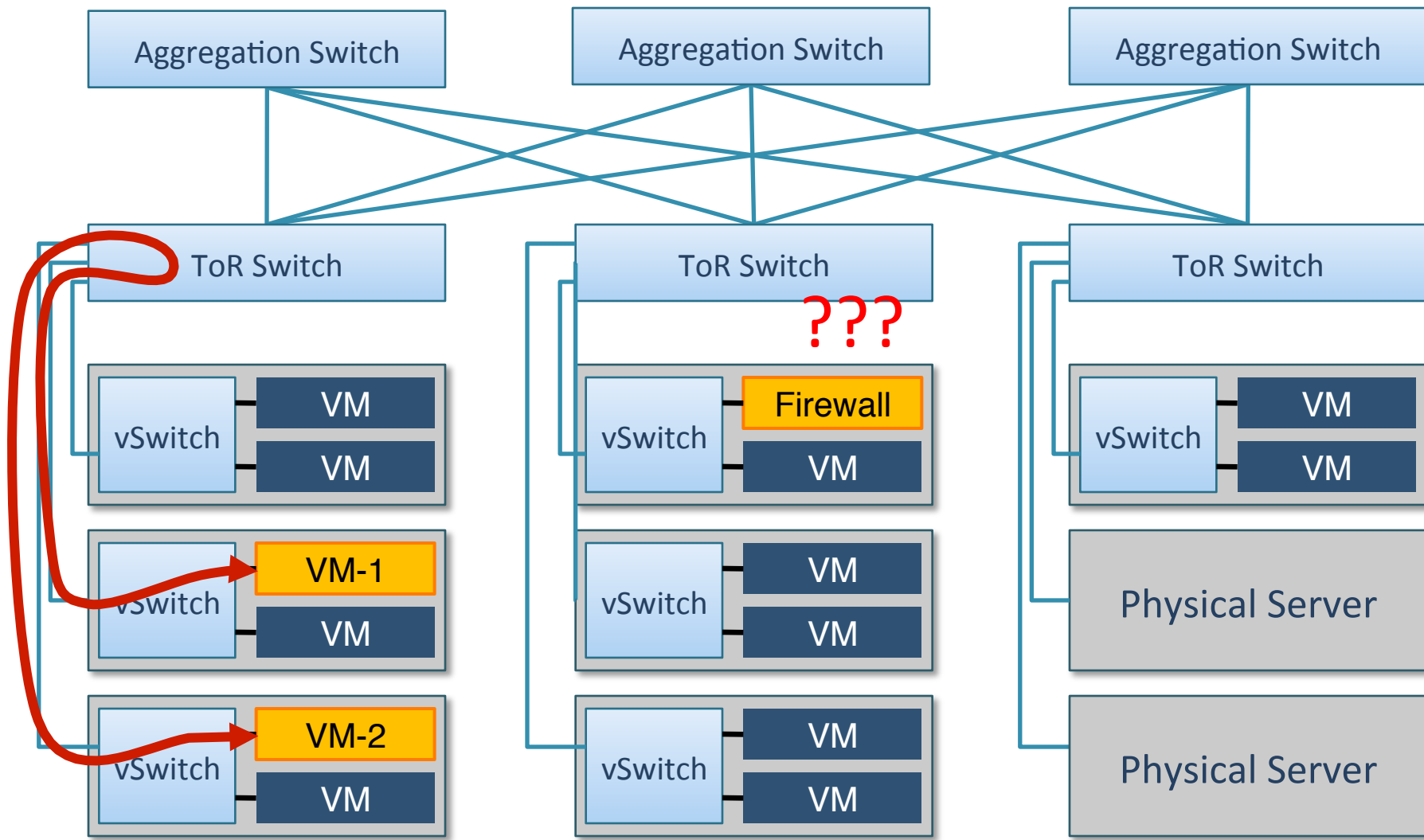
# Example 2: vArmour

## Firewall for East/West Traffic



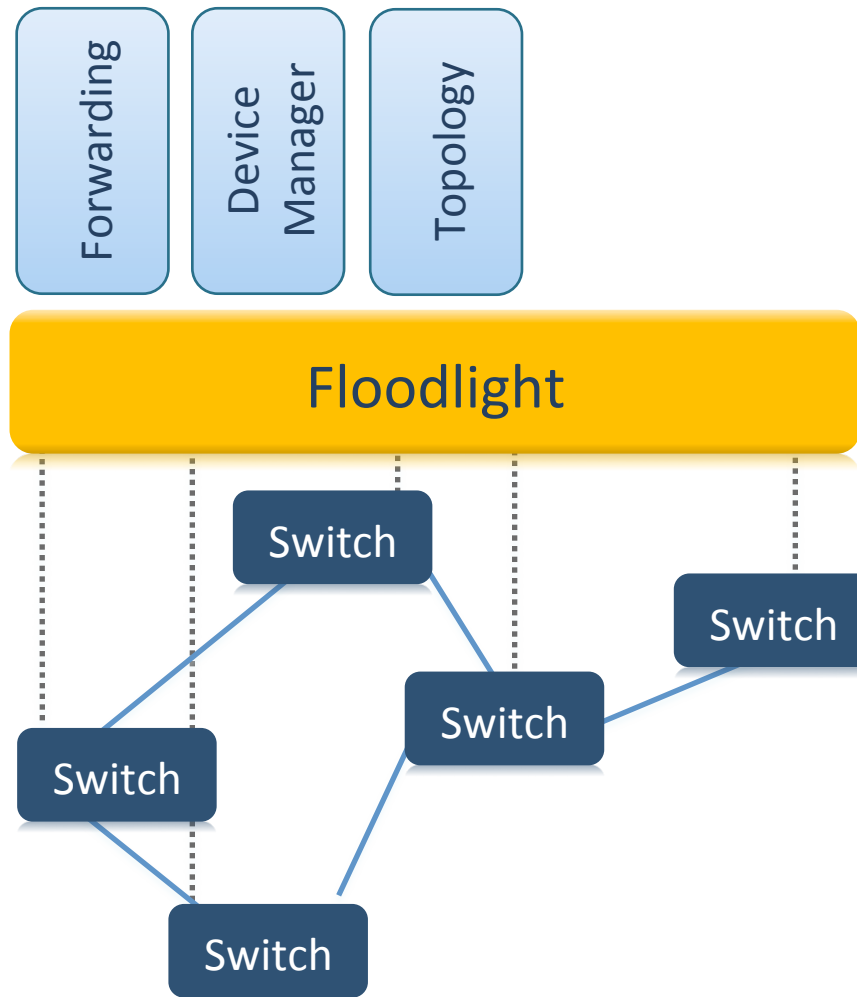
# Example 2: vArmour

Service Insertion: How can I deploy a firewall?



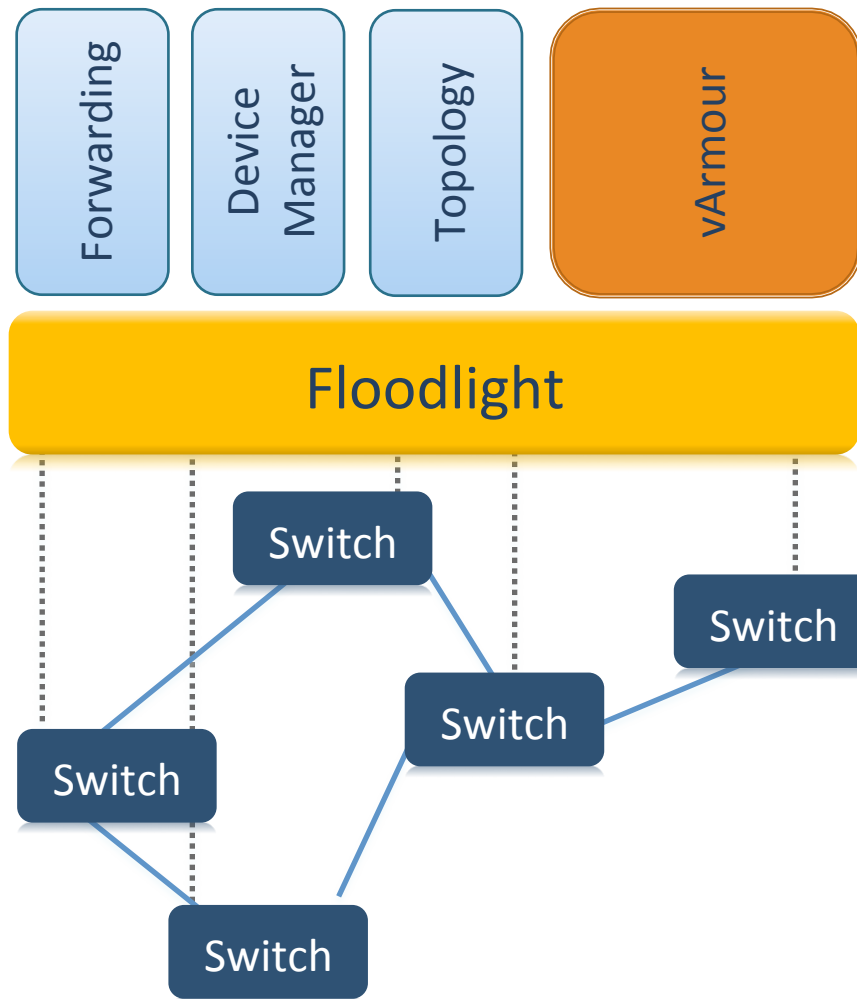
# Example 2: vArmour

## Floodlight Open Source Controller



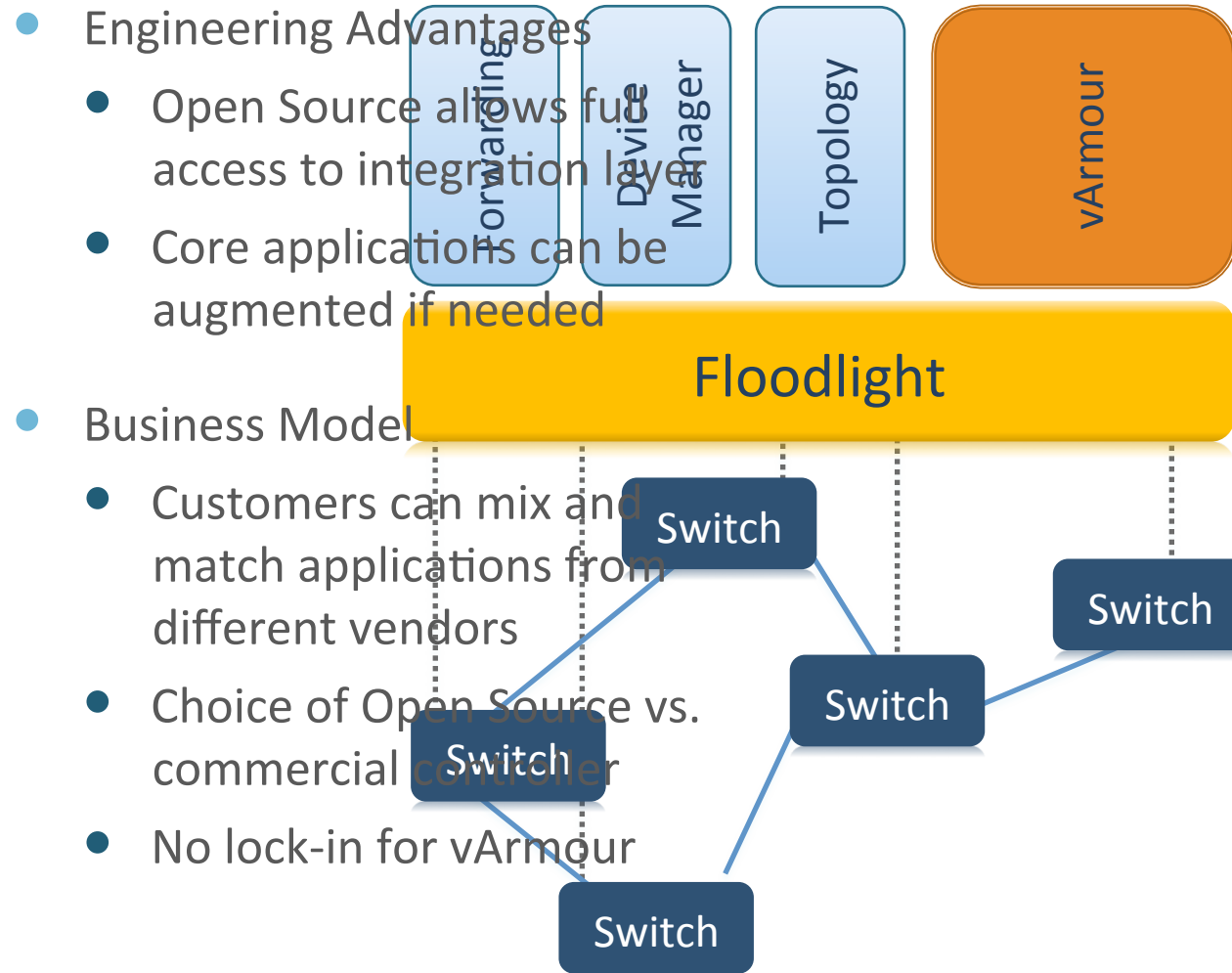
# Example 2: vArmour

Open Source provided easy integration and maximum flexibility



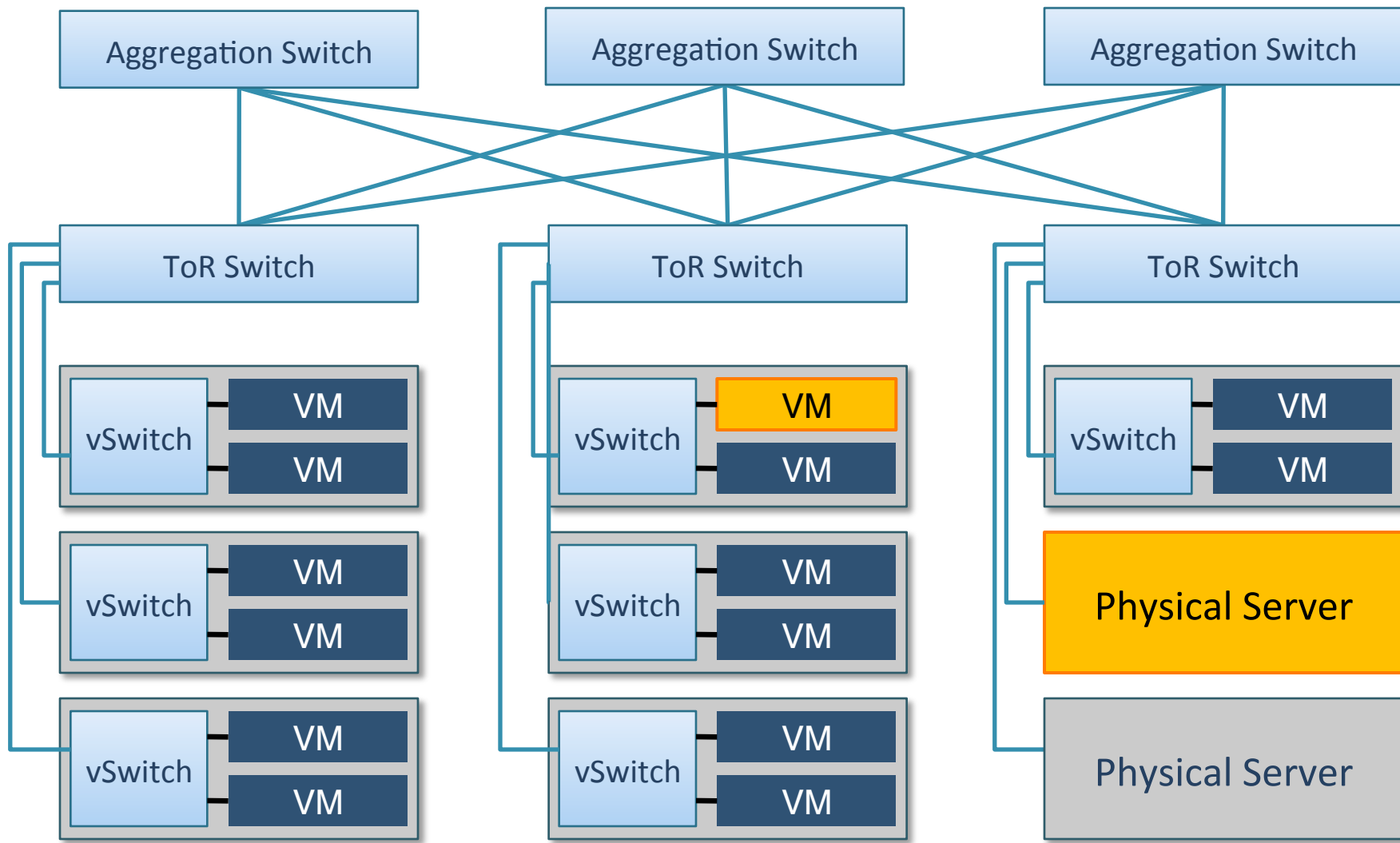
# Example 2: vArmour

## Open Source allowed easy Integration



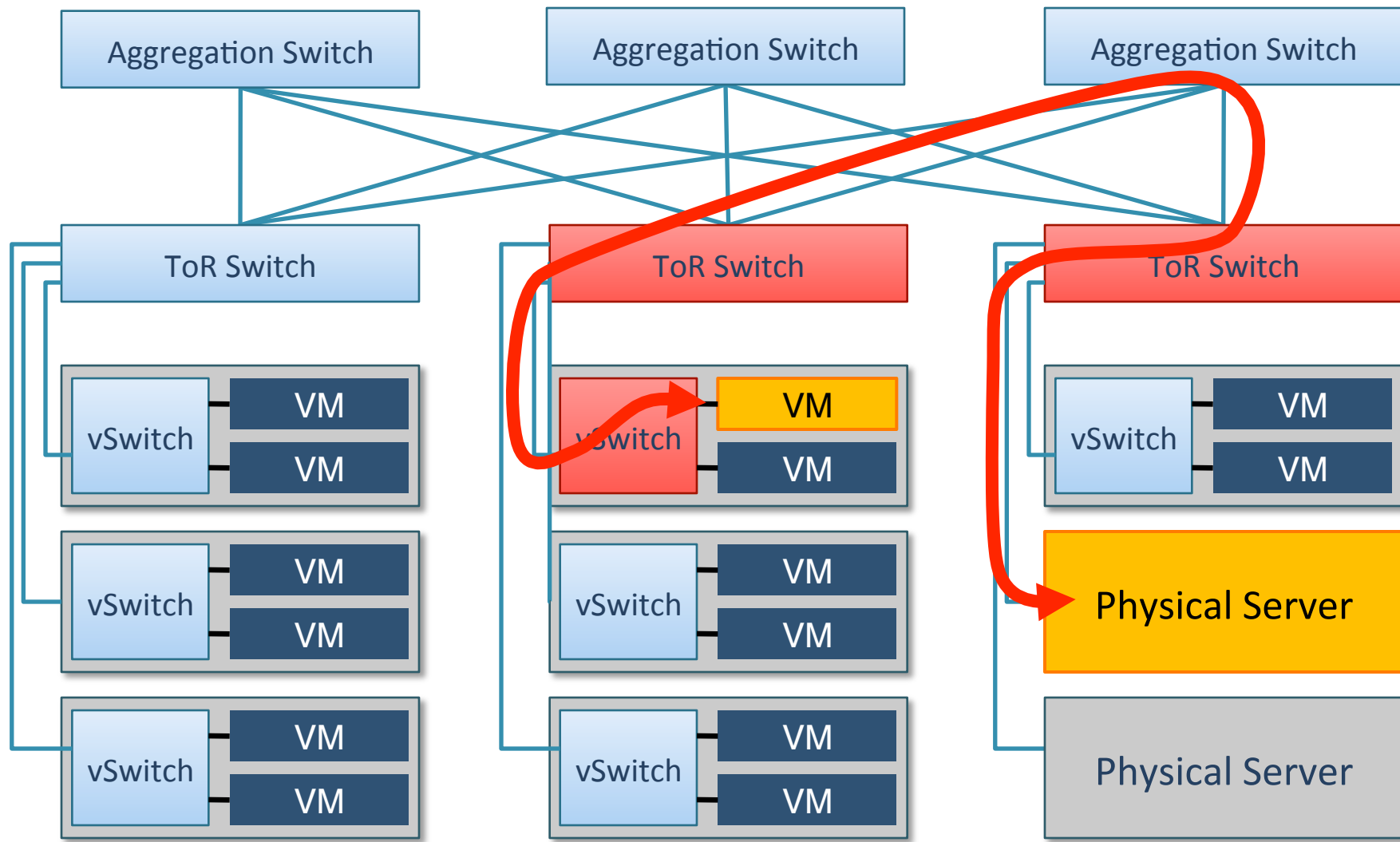
# Example 3: vSwitch/ToR Integration

Traffic from a VM to a physical server



# Example 3: vSwitch/ToR Integration

Different solutions exist, all require tight Tor/vSwitch integration



# Example 3: vSwitch/ToR Integration

Customer pick best-of-breed vendors

Physical Network



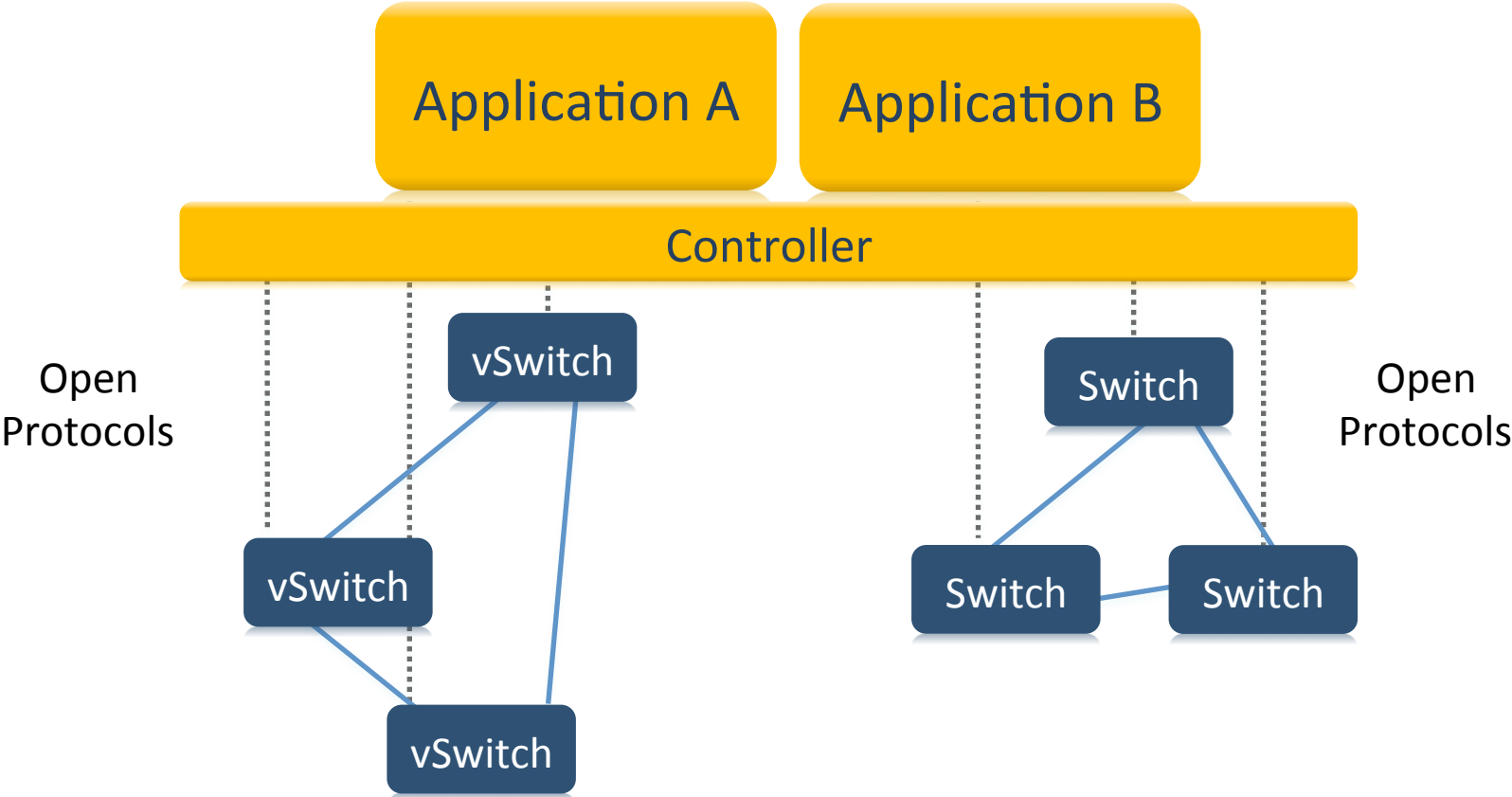
Virtual Network





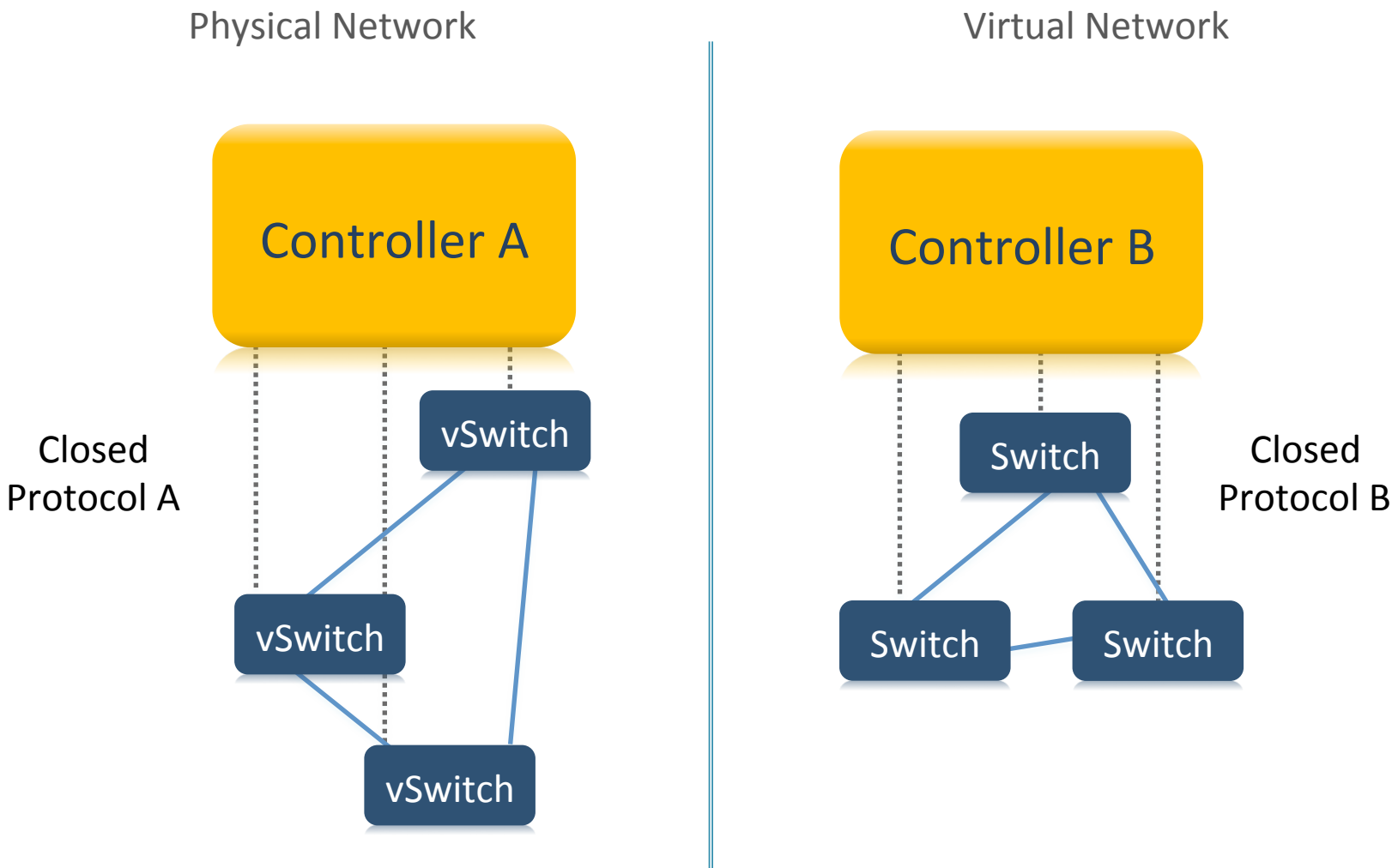
# Open Protocols

Open Protocols allow vSwitch/ToR integration



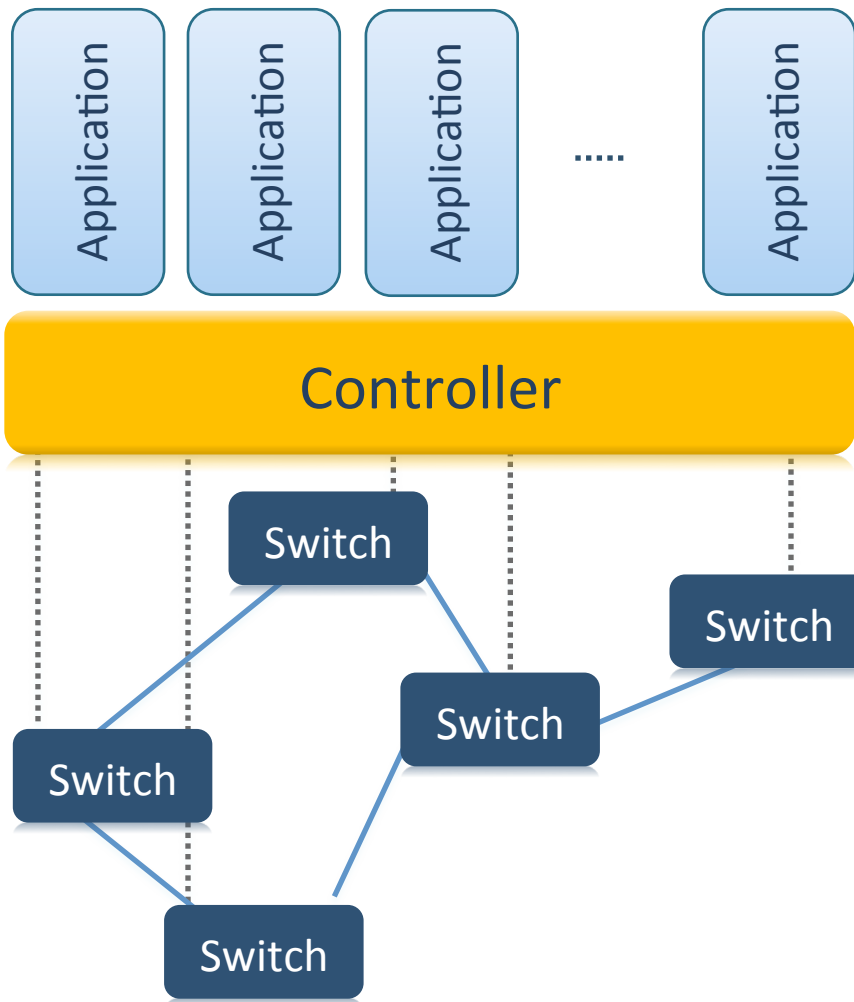
# Closed Protocols

With closed protocols it is not possible



# Open SDN

Being Open is critical for SDN's Success



- 1) Open APIs
- 2) Open source
- 3) Open Protocols

# See it live?

Please visit the demos of our partners that showcase Open SDN by Big Switch Networks.



Thank you!

