OpenFlow

technology revolution, emerging perspectives

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Vasily Dolmatov

Internet and internetworking

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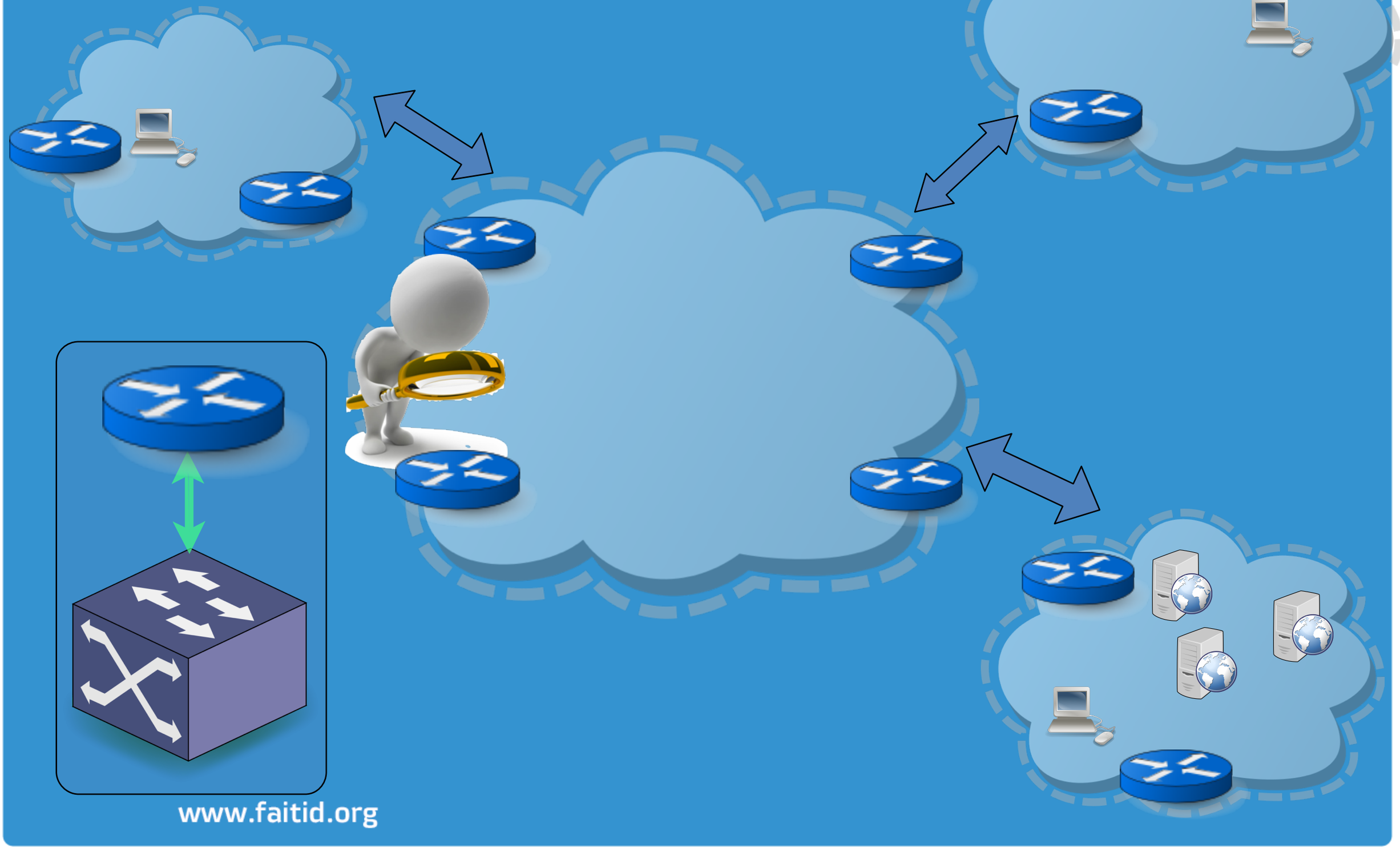

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Internet and internetworking

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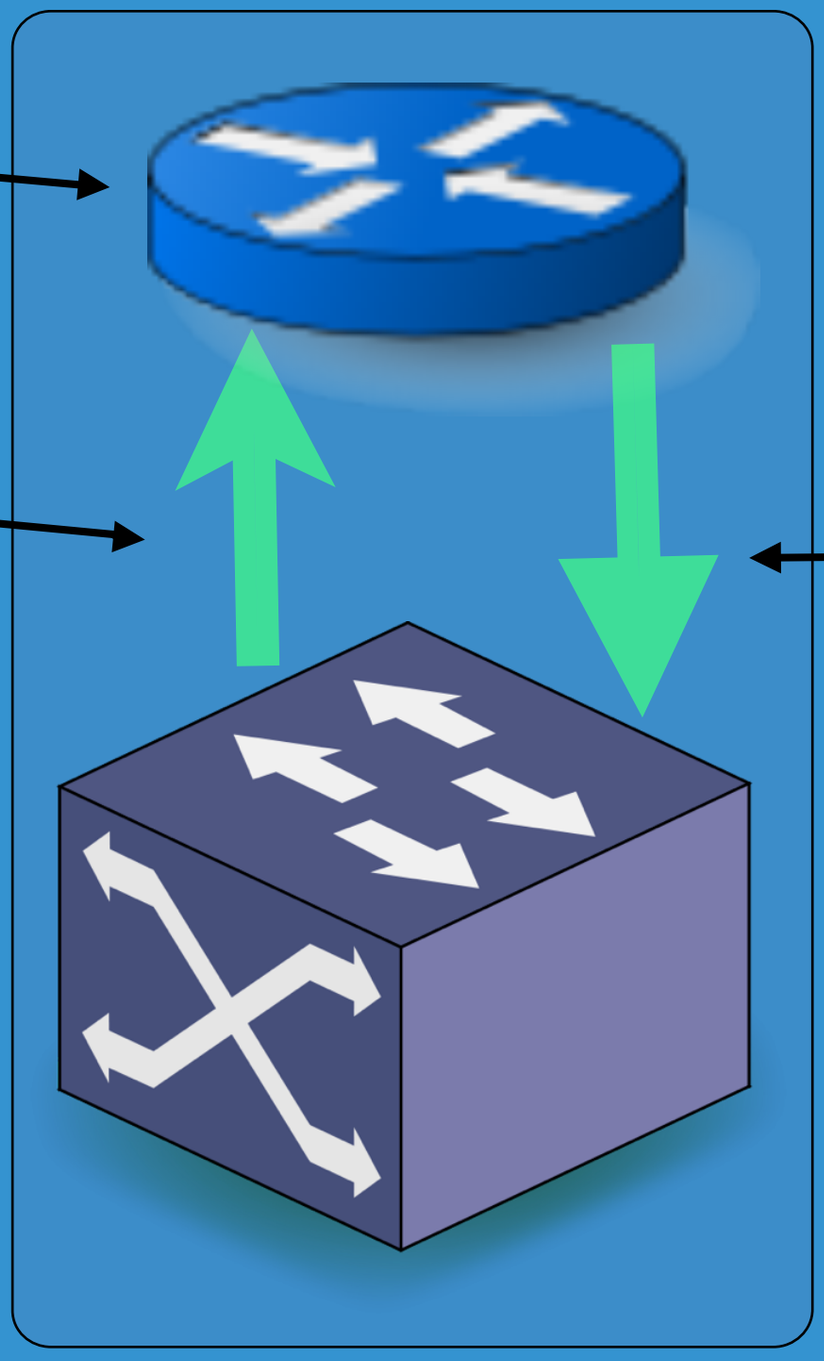
Control plane

Flow data

Routing
decision



Data plane

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Flow description

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- Ingress interface (SNMP ifIndex)
- Source IP address
- Destination IP address
- IP protocol
- Source port for UDP or TCP, 0 for other protocols
- Destination port for UDP or TCP, type and code for ICMP, or 0 for other protocols
- IP Type of Service
- ==========
- (Vendor-defined flow extensions)
  - ...
  - ...

Current problems

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- Limited CPU resources in routers
  - Limited complexity of traffic analysis
  - Limited volume of analyzed traffic
  - Multiplication of analysis operations along AS
- Problems with protocol updates
- Problems with vendor interoperability
- limited CPU resources, limited CPU resources, limited CPU resources...

OPENFLOW

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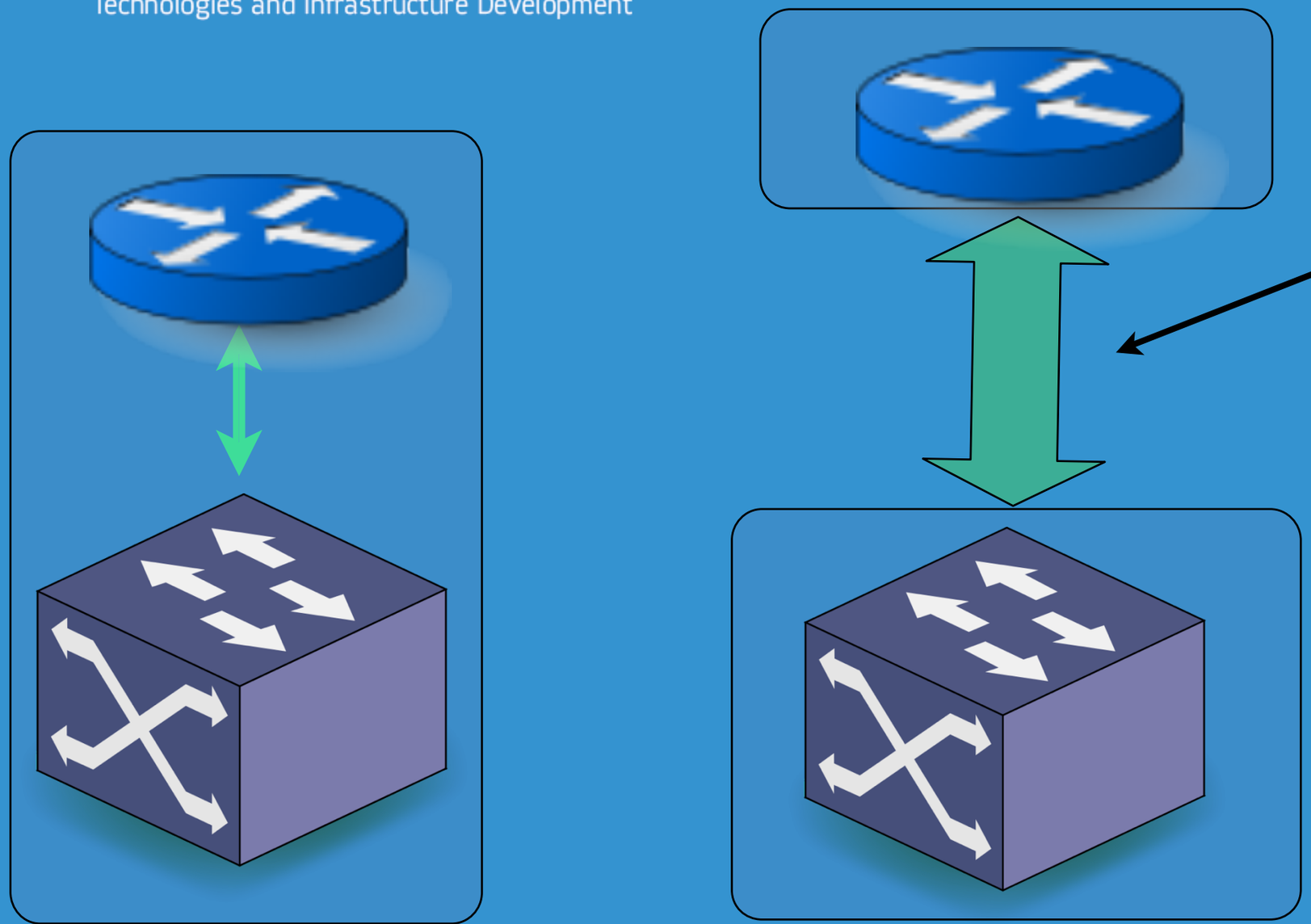

http://www.openflow.org/wp/documents/

OPENFLOW (Cont.)

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OpenFlow Controllers

- Beacon
- Floodlight
- NOX
- Trema

IBM offers first OpenFlow 10 GbE switch

IBM® is pleased to be one of the inaugural members of the ONF, and the first to adopt OpenFlow in a 10 Gigabit Ethernet (GbE) switch. Attendees of the Interop 2011 trade show in Las Vegas, Nevada, had the opportunity to view two demonstrations of the IBM BNT® RackSwitch G8264 *(Figure 2)* running OpenFlow environments.

Figure 2. IBM BNT RackSwitch G8264

HP Simplifies Networking with Broadest Choice of OpenFlow-enabled Switches

PALO ALTO, Calif. -- HP today announced a portfolio of OpenFlow-enabled switches, providing customers with the broadest choice in the industry for simplifying network management while meeting a wide range of bandwidth, performance and budget needs.(1)

The portfolio spans 16 models and includes the HP 3500, 5400 and 8200 series switches.

Internetworking with OpenFlow

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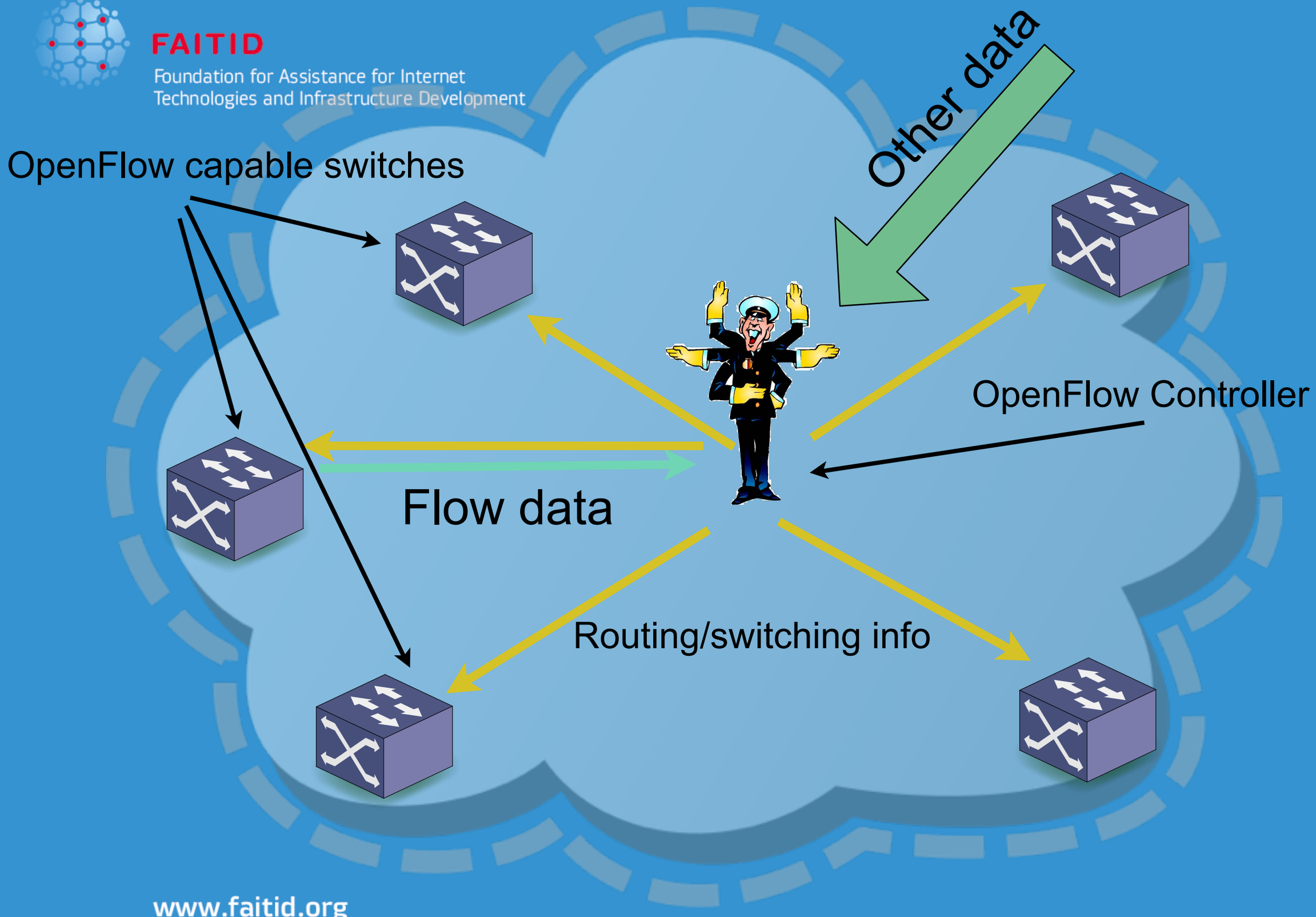

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Quick advantages

No CPU limitation!!

- Detailed traffic inspection
- Efficient dDoS mitigation
- More throughput
- ==========
- Yet another virtualization level (IaaS, SDN)

More distant perspectives

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- Host mobility solution
- New IDR protocols
- New networking hardware
- New global network
- Interstellar travels... ;)

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Questions?

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