

OpenFlow



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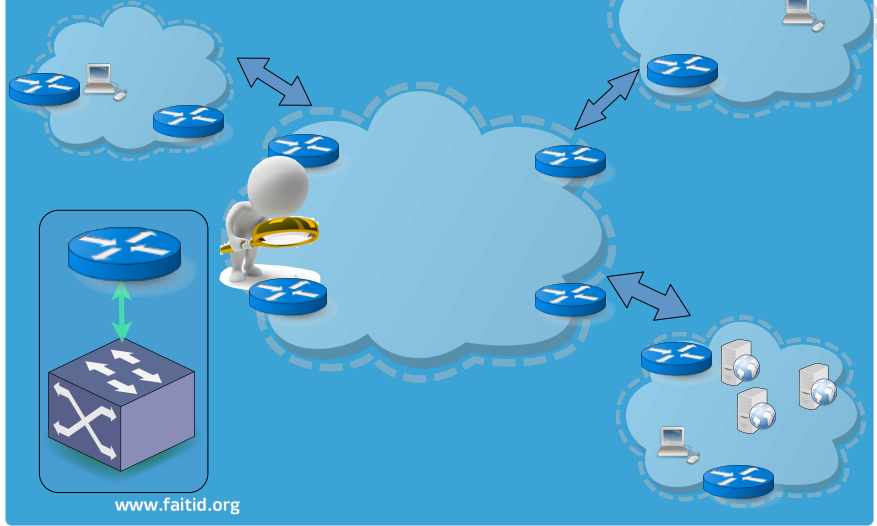
**technology revolution,
emerging perspectives**

Vasily Dolmatov

Internet and internetworking



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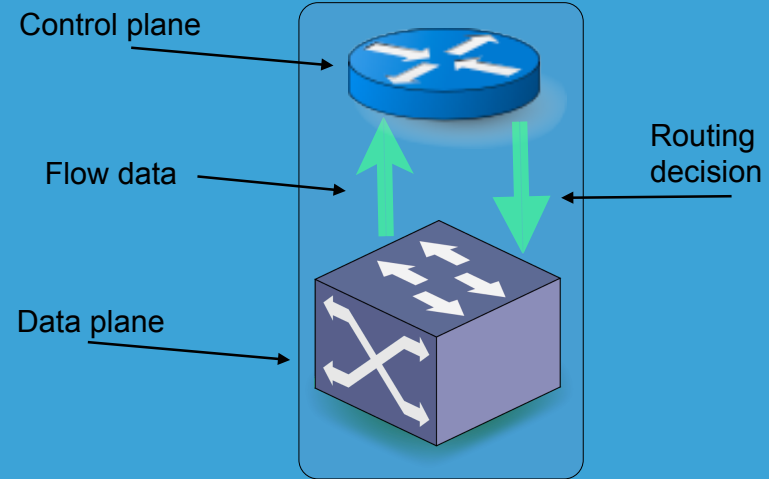


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Internet and internetworking



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Flow description

- 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)
 - ...
 - ...

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Current problems

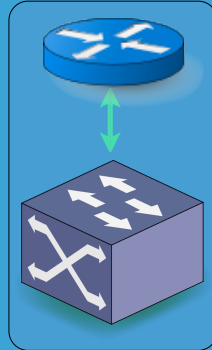
- Limited CPU resources in routers
 - Limited complexity of traffic analysis
 - Limited volume of analyzed traffic
 - Multiplication of analysis operations along AS
- Problems with protocol updates
- Problems with vendor interoperability
- limited CPU resources, limited CPU resources, limited CPU resources...

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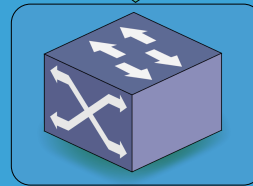


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OPENFLOW



OpenFlow



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

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OPENFLOW (Cont.)

OpenFlow Controllers

- [Beacon](#)
- [Floodlight](#)
- [NOX](#)
- [Trema](#)

OpenFlow switches

- [Software – vOpenFlow](#)
- [Hardware](#)

IBM offers first OpenFlow 10 GbE switch

IBM is pleased to be one of the inaugural members of the ONE, 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 CR264 (Figure 2) running OpenFlow environments.



Figure 2. IBM BNT RackSwitch CR264

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.

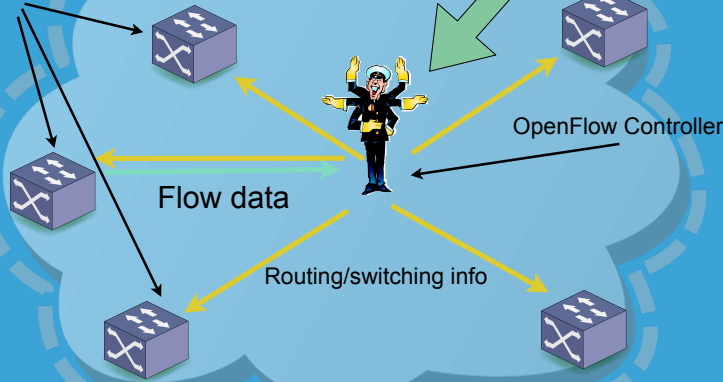
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Internetworking with OpenFlow



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OpenFlow capable switches



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Quick advantages

No CPU limitation!!

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





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More distant perspectives

- Host mobility solutions
- New IDR protocols
- New networking hardware
- New global network
- Interstellar networks... ;)

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Questions?

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