ONF Configuration and Management WG

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ONF Overview

Open Networking Foundation

- **Standardizing OpenFlow-based SDN**

- **http://opennetworkingfoundation.org**

- **Working groups**

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Extensibility	OpenFlow: wire protocol, extensibility, features ,… (OF 1.x)
Config-mgmt	Protocol & schema for configuration of a switch (OF-Config 1.x)
Testing-interop	Interoperability tests, plug-fests; performance benchmarking
Hybrid	OpenFlow in legacy networks; hybrid switches, hybrid networks
Architecture	SDN architecture based on OpenFlow
Forwarding Abstractions	Table Typing, Forwarding plane models

Config & Mgmt. WG: Problem statement

- Bootstrap OpenFlow network
  - Switch connects to controller
  - Controller(s) to connect to must be configured at switches

- Allocate resources within switches
  - Ports
  - Queues
  - . . .
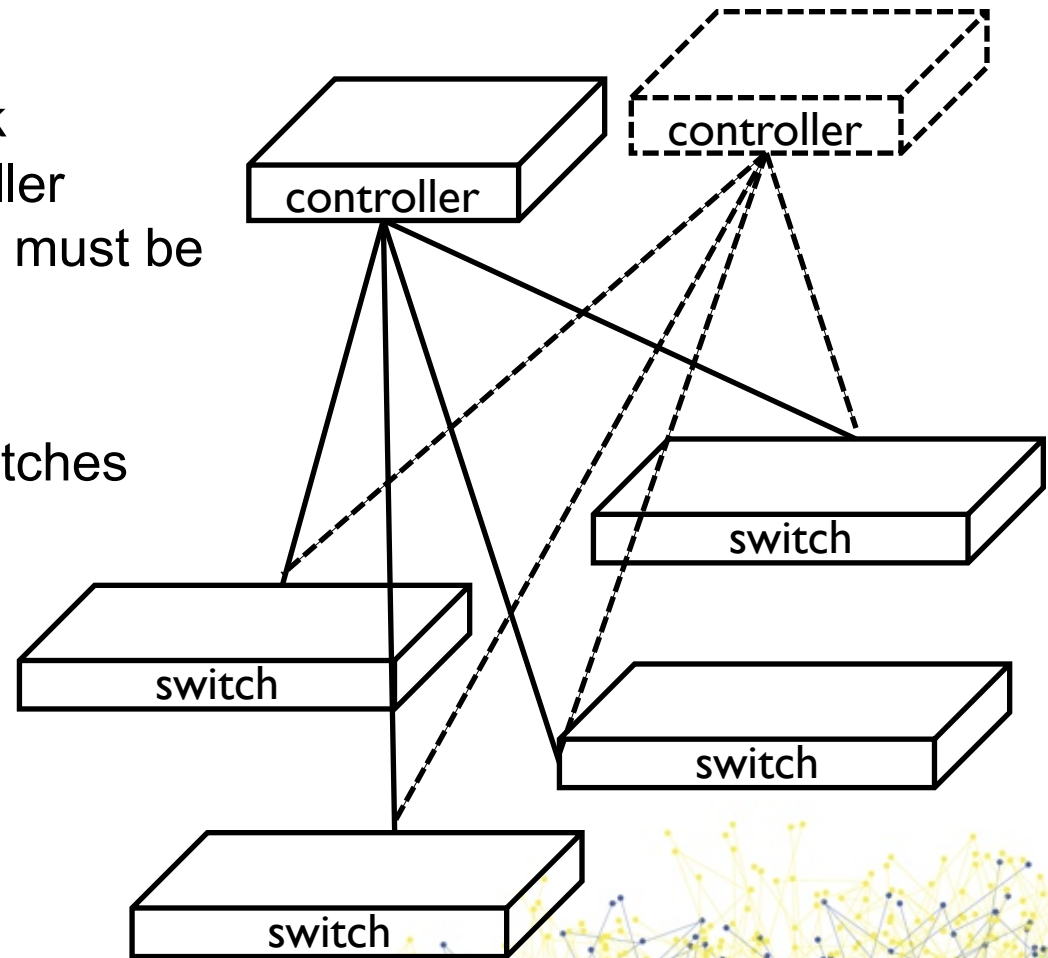
Reference Model

- Configuration Point
  - Source of switch configuration
- OpenFlow Capable Switch
  - Hosts one or more logical switches

- OpenFlow Controller
- OpenFlow Logical Switch
  - instance of an OpenFlow Switch
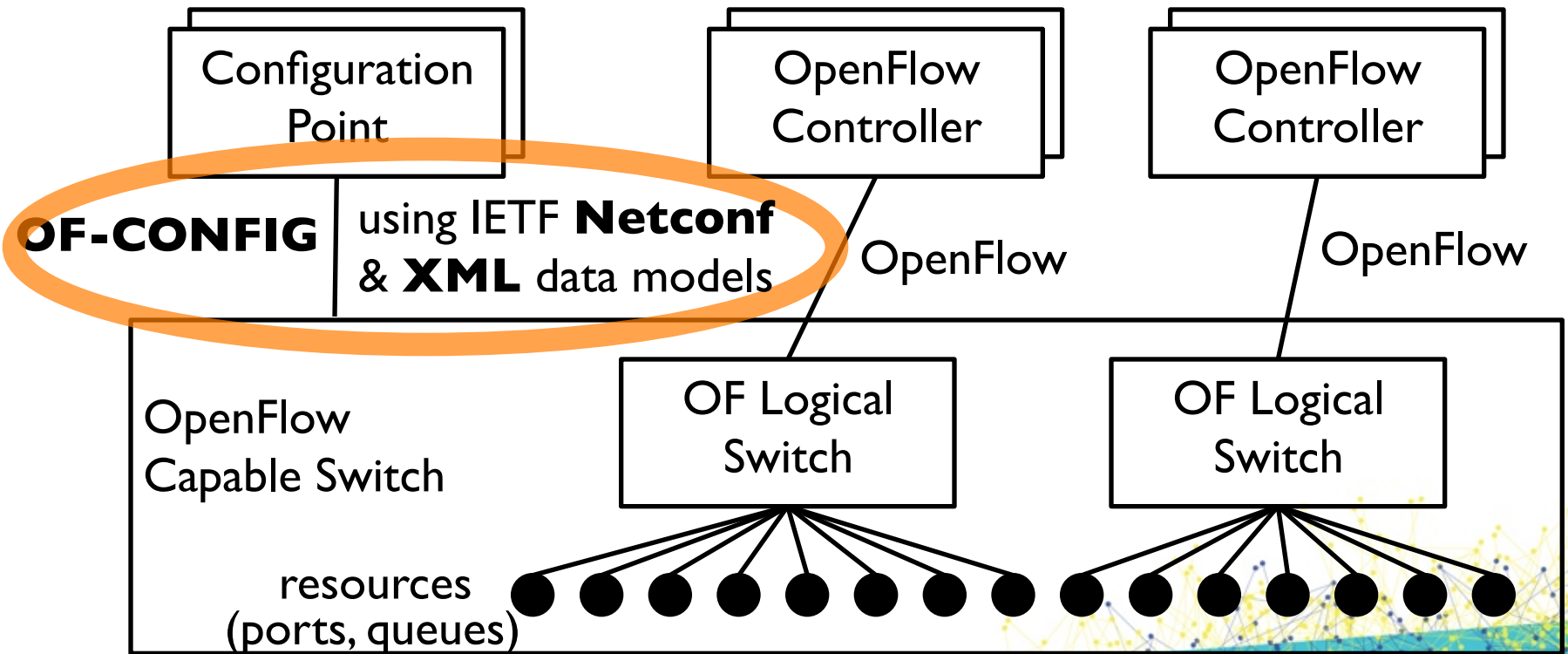
OF-CONFIG scope and releases

- **OF-CONFIG 1.0** (Jan 2012) based on OpenFlow 1.2
  - assigning controllers to logical switches
  - retrieving assignment of resources to logical switches
  - configuring some properties of ports and queues

- **OF-CONFIG 1.1** (Apr 2012) based on OpenFlow 1.3
  - added controller certificates and resource type "table"
  - retrieving logical switch capabilities signaled to controller
  - configuring of tunnel endpoints

- **OF-CONFIG 1.1.1** (Aug 2012) based on OpenFlow 1.3.1
  - consolidation of version 1.1, fixing small inconsistencies

- **OF-CONFIG 1.2** (early 2013) based on OpenFlow 1.3.1
  - features still under discussion, candidates include
    - retrieving capable switch capabilities, configuring logical switch capab.
    - assigning resources to logical switches
    - simple topology detection
    - event notification

Use of Netconf and Yang

- Netconf was chosen as management protocol
  - not necessarily accepted as ideal solution
  - still discussing alternatives

- XML schema was chosen as modeling language
  - Yang is also used, but XML is normative
  - normative XML schema generated from Yang code

- So far, the focus has been on configuration
  - bootstrap of an OpenFlow network is the obvious first thing to do

- New work items will be more on OAM
  - incl. event notifications

Call home issue

- In the OF-CONFIG spec the primary scenario is using Netconf with connections initiated by the configuration point

- However, several members asked for also supporting call home sceanrios with switch initiating Netconf connections
  - switch configured with DHCP
    - receives own address and configuration point's address
  - no need to manually add switch to configuration point's DB

- OF-CONFIG document states: use BEEP if you need switch-initiated connections
  - now, BEEP is getting "historic"

- Options:
  - drop call home scenario
  - ask ITEF to further support call home