



SDN/OPENFLOW IN LHCONE

A discussion



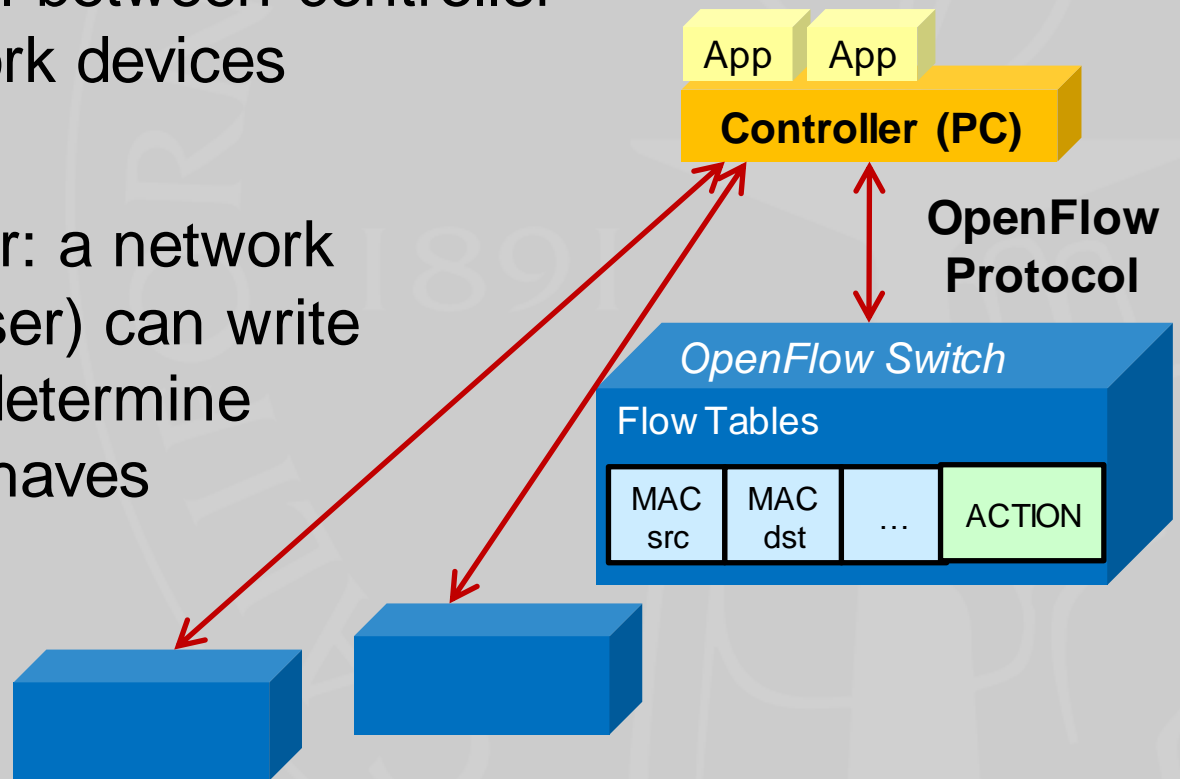
SDN discussion in LHCONe

- We had a session on SDN in LHCONe, appended to the point-to-point workshop in Geneva in May
 - <https://indico.cern.ch/conferenceDisplay.py?confId=241490>
- The idea was to open a discussion on SDN use cases in the scope of LHCONe



One slide of introduction

- Software Defined Networking (SDN):
Simply put, **physical separation of control and data planes**
- Openflow: a protocol between controller entity and the network devices
- The potential is clear: a network operator (or even user) can write applications which determine how the network behaves



- SDN/Openflow could enable solutions to problems where no commercial solution exists
- **Can we identify such unsolved issues/problems?**
 - Which
 - have no solution so far, or
 - the solution is complex or introduces other issues
- SDN/Openflow could naturally provide a platform for a solution
 - network intelligence is completely controlled by the developer
- **Caveat: coding is required, not for the faint-hearted**
 - (no, we cannot just buy a controller)



At the meeting in Geneva, we had identified such cases:

- Multitude of transatlantic circuits makes flow management difficult
 - Impacts the LHCONE VRF, but also the GPN
 - No satisfactory commercial solution has been found at layers 1-3
 - Problem can be easily addressed at Layer2 using Openflow
 - Caltech has a DOE funded project running, developing multipath switching capability (OLiMPS)
 - We'll examine this for use in LHCONE
- ATLAS use case: flexible cloud interconnect
 - OpenStack at several sites.
 - Openflow is the natural virtualisation technology in the network. Could be used to bridge the data centers





AND NOW FOR SOMETHING DIFFERENT

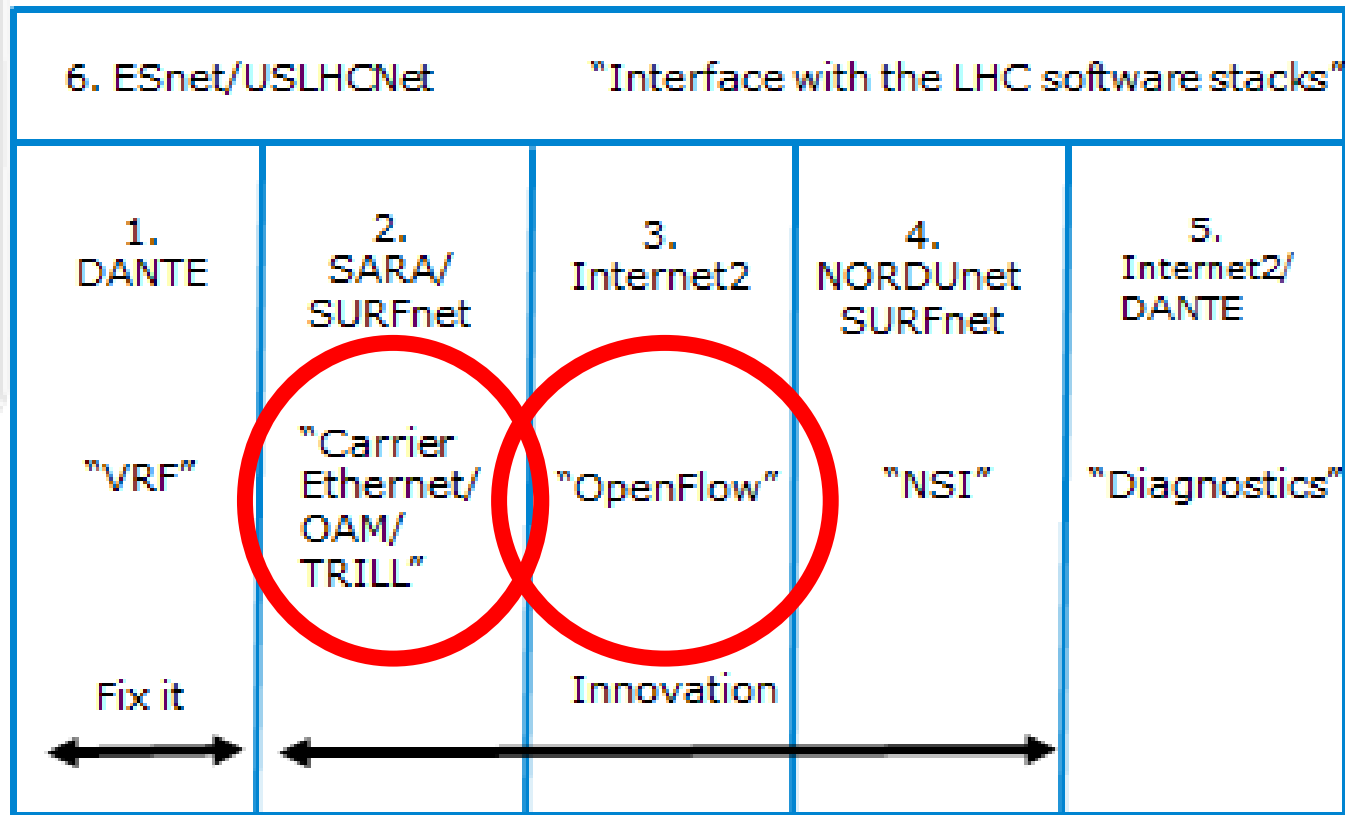


NORDUnet

North American Research & Education

LHCONe Activities

Lars Fischer



Result of the LHCONe meeting in Amsterdam, December 1&2, 2011



On the other hand...

- the openflow activity as such is dormant
- the CE/TRILL activity has evolved towards using Openflow for demos

- Ronald suggested we might merge the two activities
- Proposal: new, single activity: **Applied SDN**
 - include multipath concept development
 - include WAN virtualisation
 - include



Role of the group?

- There exist several Openflow testbeds
 - ESnet ANI, OFELIA, GN3+ openflow facility, etc.
 - Some (not all) could be a playground for testing the ideas for later use in LHCONE
- A role for this group could be twofold:
 - work with the respective entities on development of a particular solution
 - follow/inform the various efforts in NRENs





OPEN FOR DEBATE...

