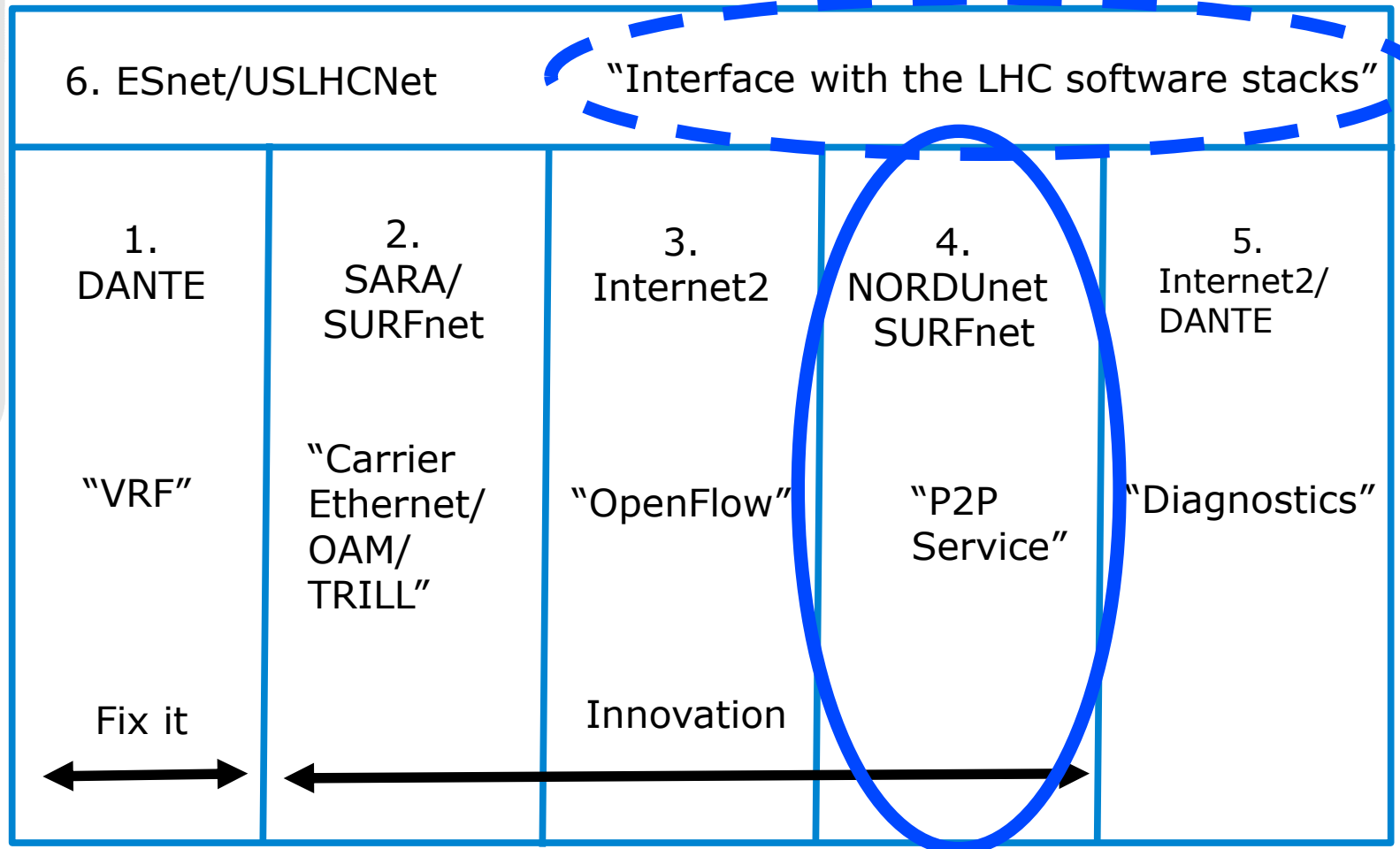


Workshop Introduction - Finding the Match

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LHCONE Workshop
CERN, 13-14 December 2012

- Welcome to CERN
 - Thanks to CERN for hosting
 - Thanks to all of you for attending
- A community workshop
 - Part of the LHCONE process
 - Expanded LHCONE working group
 - A meeting of networkers and WLCG participants
- This is a workshop
 - We're here to jointly find a way forward

- The dual challenge
 - Predictable performance
 - Protecting everyone else from overload
- Why LHCOPN was successful
 - Dedicated, hierarchical data distribution network for limited number of sites
- Why do we need LHCONE
 - WLCG computation model has changed
 - Any T2/T3 to/from any T1 traffic
- ... and why can't we reuse the LHCONE model
 - Larger number of sites
 - Changing traffic patterns



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



- VRF solution deployed
 - “LHCONE 1.0” moved to production
 - Sites getting connected, traffic growing
 - Progress on diagnostics, monitoring
- Engineering focus moved to “LHCONE 2.0”
 - Progress on service definitions
 - Discussion, better understanding of next-generation technology options

- Consensus among networking people
 - What can be offered as a service
 - Understanding of how a service can be managed across domains
- Service Definition in place, documented
 - Document extensively discussed, rough consensus established
- Point-to-Point protocols
 - NSI framework agreed as the longterm solution
 - Both NSI and IDCP in deployment, can be used for LHC traffic now
 - Major networks moving towards NSI2.0
- Pilot discussed, not yet initiated
- Service not yet in operation

- ESnet and Internet2 BoD deployments
 - Extensive deployment across North America, strong experience with managing a BoD service
- European BoD deployment
 - GEANT, growing number of NRENs
 - Commitment to have NSI2.0 deployed by Q1 2014
- NSI 2.0 framework
 - Connection Service standardization
 - AutoGOLE testbed
- Work in Progress
- How do we leverage these to bring a service to the LHCONE?

- Point-to-point require experiments to approach networking differently
 - Not a drop-in replacement for the existing network service.
 - Network transport is unchanged
 - Network resource usage is no longer transparent to the application workflow
- Point-to-Point reservation must be integrated with applications
 - Must be part of workflow design
- For WCLG, this means
 - Changing a complex set of applications
 - Finding the right match between PtP technology and the workflow of the experiments

- Easier to manage peers
- Cleaner way to manage resource allocation
 - Enabling use of available resources
 - Ensuring resources are used as intended
- Cleaner way to handle the firewall issues
- Avoid VRF design kludge and administration issues

- We need to integrate point-to-point transport into the WLCG applications
 - We must understand where in the workflows used point-to-point circuits can be requested & terminated
 - We need to understand the full production cycle, with point-to-point part of the picture
 - Networkers need to understand the WLCG workflow
 - WLCG site and application people must understand what point-to-point can offer
- Where we are:
 - We have the service definition...
 - ... but we're missing a clear picture of the system and the system elements where the service is deployed
 - ...and agreement on the components we will use to build that system
- We need a joint group to do that!

- We hope to
 - Identify and agree simple use cases for the service, implement quickly
 - Gradually expand the service, build as one component of the comprehensive LHCONE network service
 - Point-to-point and VRF in parallel for some time (at least)
- We (the networkers) need help
 - Including application experts, workflow managers, sites, users
 - Collaborative effort
- We need The Big Picture™
 - Working on the components will not ensure progress

- Thursday: building understanding
 - Explain the basics, challenges, and status of point-to-point networking
 - Explain the basics, challenges, status, and changes of the WLCG applications and computation model
- Friday: initiating design
 - Discuss how point-to-point can fit into WLCG model
 - Discuss the challenges posed to point-to-point by the WLCG applications
 - Form consensus on a realistic way forward
 - Form a group of people to carry the work forward
 - we need more than networkers for this to succeed

1. A clear picture of how the point-to-point network model and the WLCG computation model match
2. A roadmap for what must be done to (eventually) deploy and use a service based on this match
3. A clear set of (simple) next steps for implementation in first half 2013
4. An expanded LHCONe group – clear point of contact between networkers and experiments.