



15/08/2015

Integrating Htopml into Daqpipe

Author:

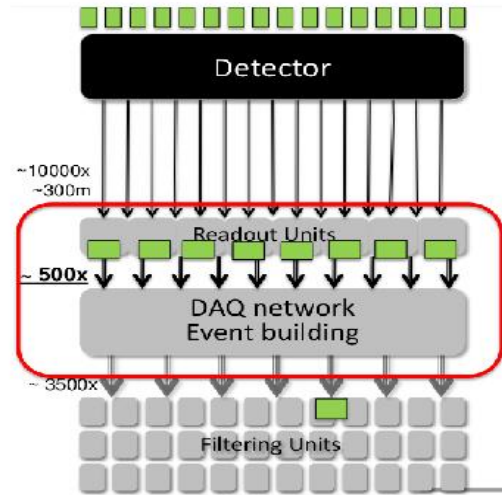
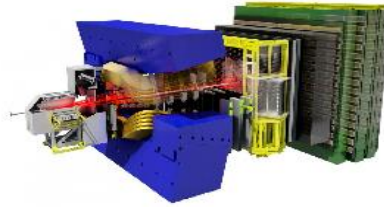
Patricia Ribes Metidieri

Supervisors:

Sébastien Valat

Ricardo Graciani

The Project Challenge



> After LS2 all triggering in software → rate of ~4 Tb/s.

> So we need a 100 Gb/s network to aggregate the data in real time!

> How do we test it?
DAQPIPE

> For deeper analysis, need a profiling tool...
HTOPML

Solution and Personal Contribution (I)

New in Htopml :

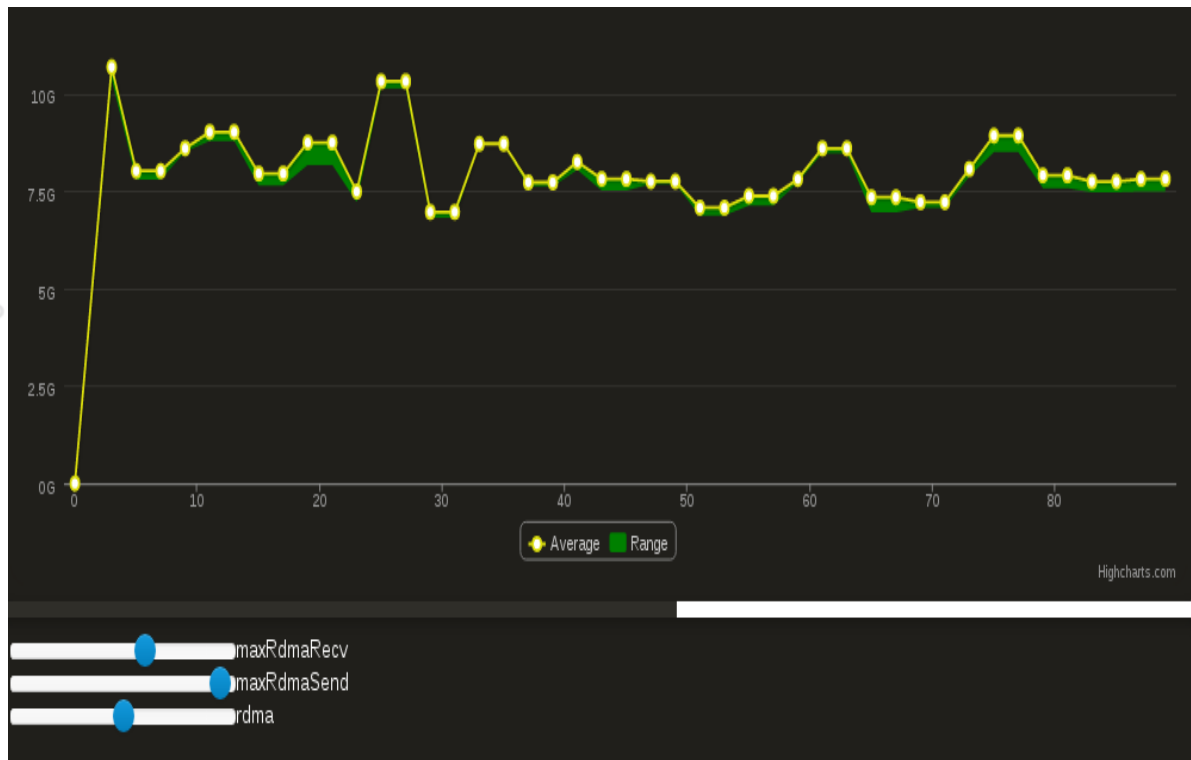
- › **Bandwidth**
- › **Balance**
- › **Layout**
- › **Gather-histogram**

Solution and Personal Contribution (II)

> New in Daqpipe:
On the fly parameters
change...currently for

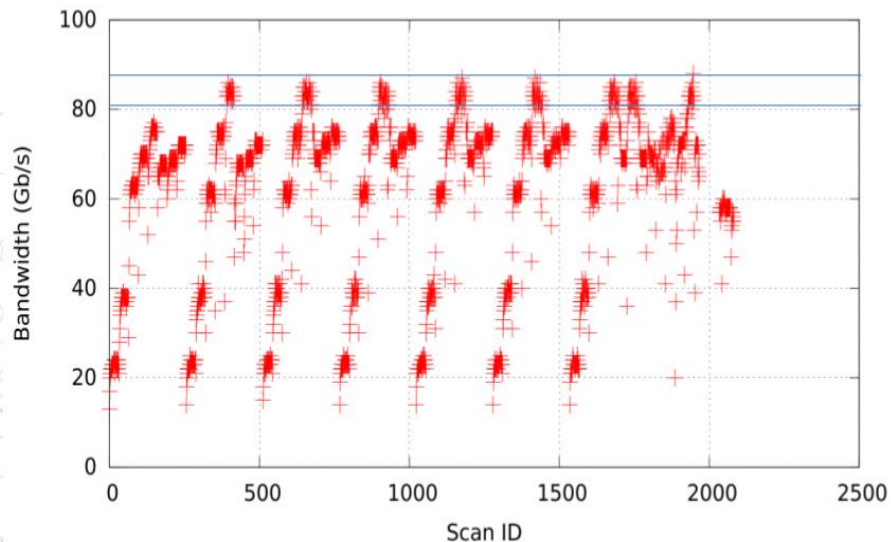
MaxRdmaSend
MaxRdmaRecv

> Had to patch Htopm1 to
support dynamic
changes

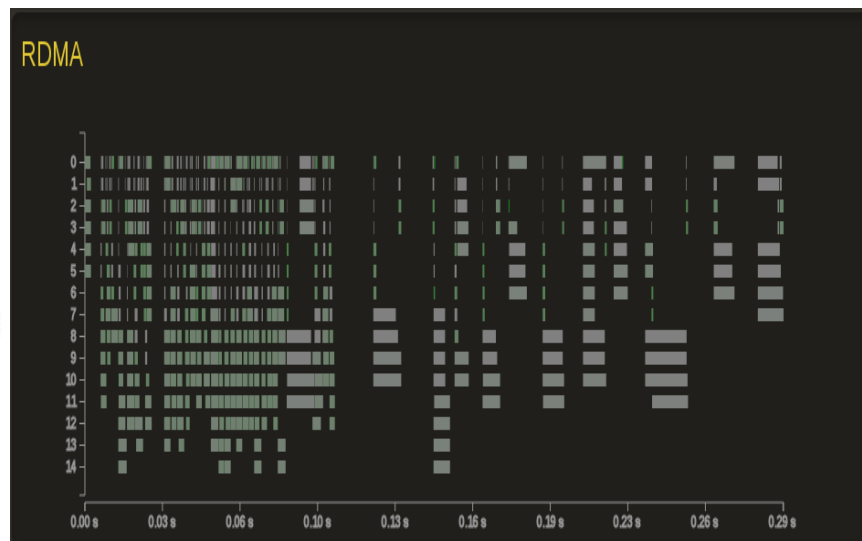


The Project Impact (I)

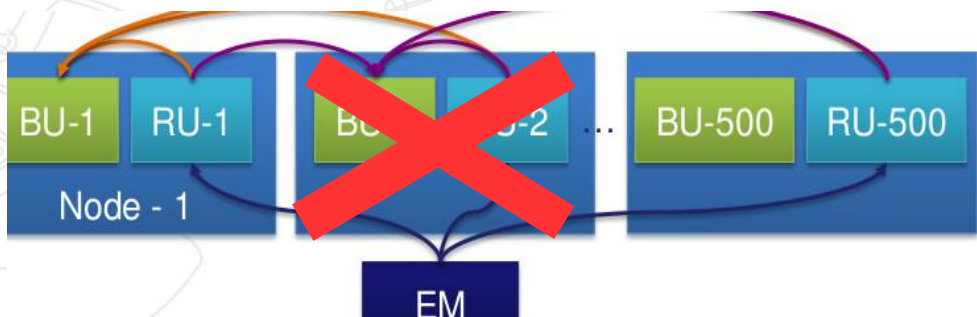
Remote Direct Memory Access (Rdma) communications



> Analyze the performance of Rdma communications in different networks



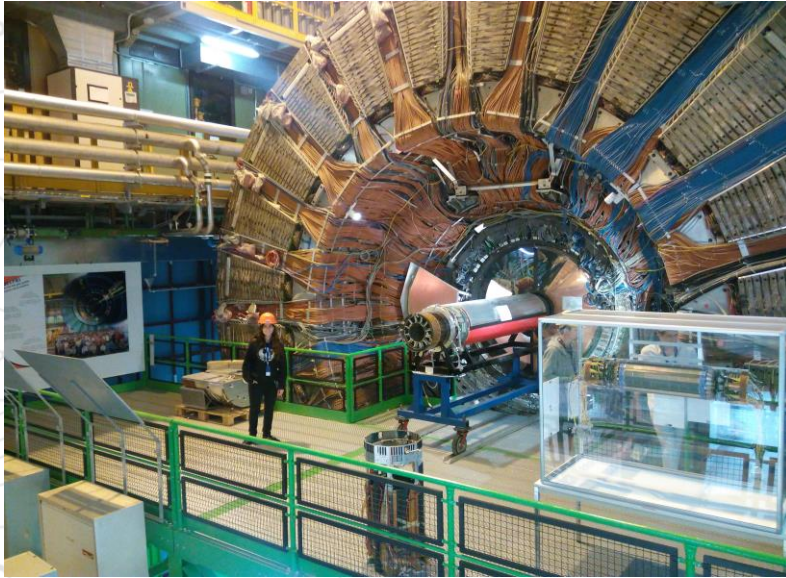
The Project Impact (II)



> Detect non-functional nodes for failure recovery !

> Htopml now detects simulated failing nodes.

Rank	Units								Host
0	EM	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
1	RU	BU	PU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
2	RU	BU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
3	RU	BU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
4	RU	BU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
5	RU	BU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
6	RU	BU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch
7	RU	BU	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	pchlcb158.cern.ch



UNIVERSITAT DE
BARCELONA



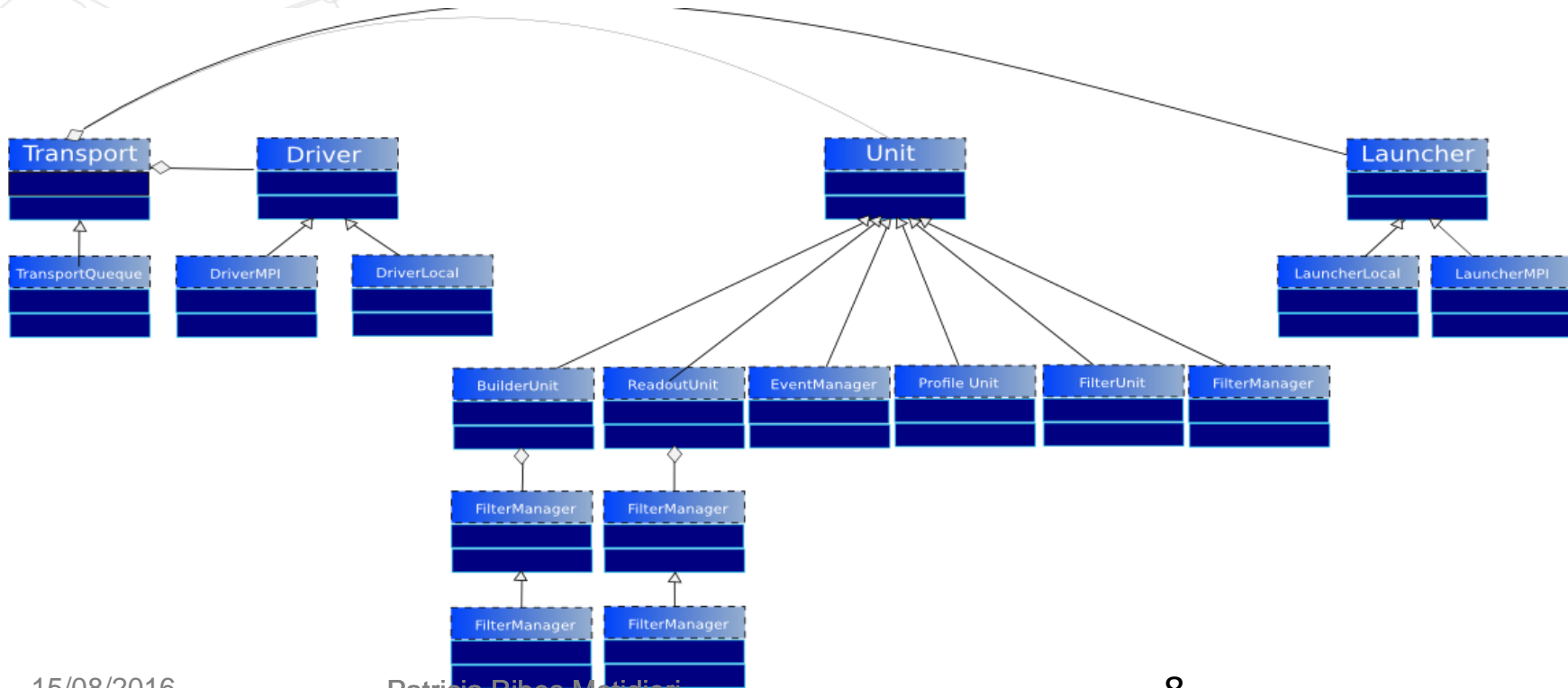
pribesme7@alumnes.ub.edu

15/08/2016

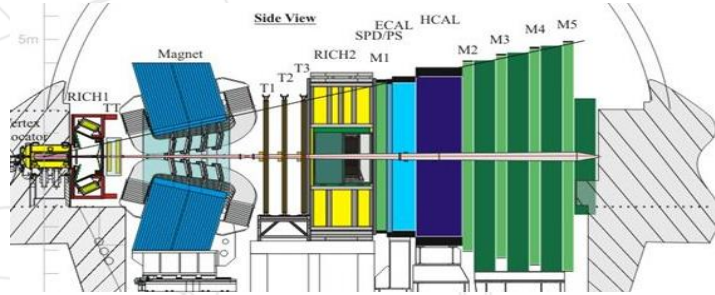
Patricia Ribes Metidieri

7

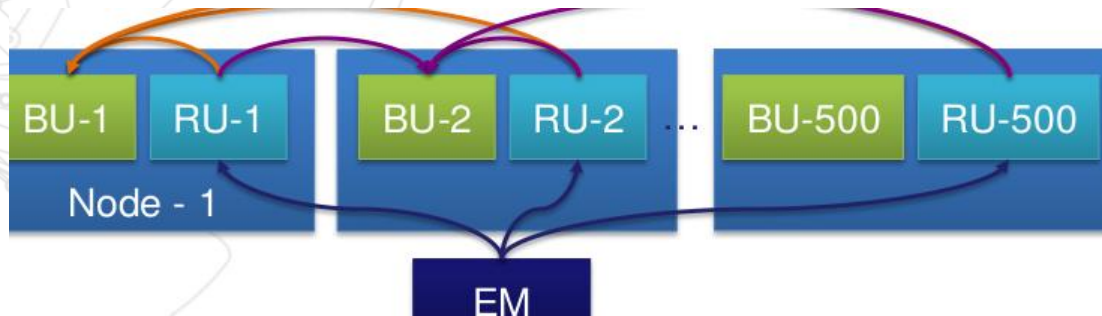
More on Daqpipe (I): Program structure



More on Daqpipe (II): DAQ and event building



- Currently, event building performed on hardware
- In High Luminosity LHCb, the Event Building will be performed on the BU.
- EM selects BU in which build every event



More on Htopml (I): Rdma communications

- Rdma = “Remote Direct Memory Access”

