Network Cost Matrix

And some FTS throughput measurements

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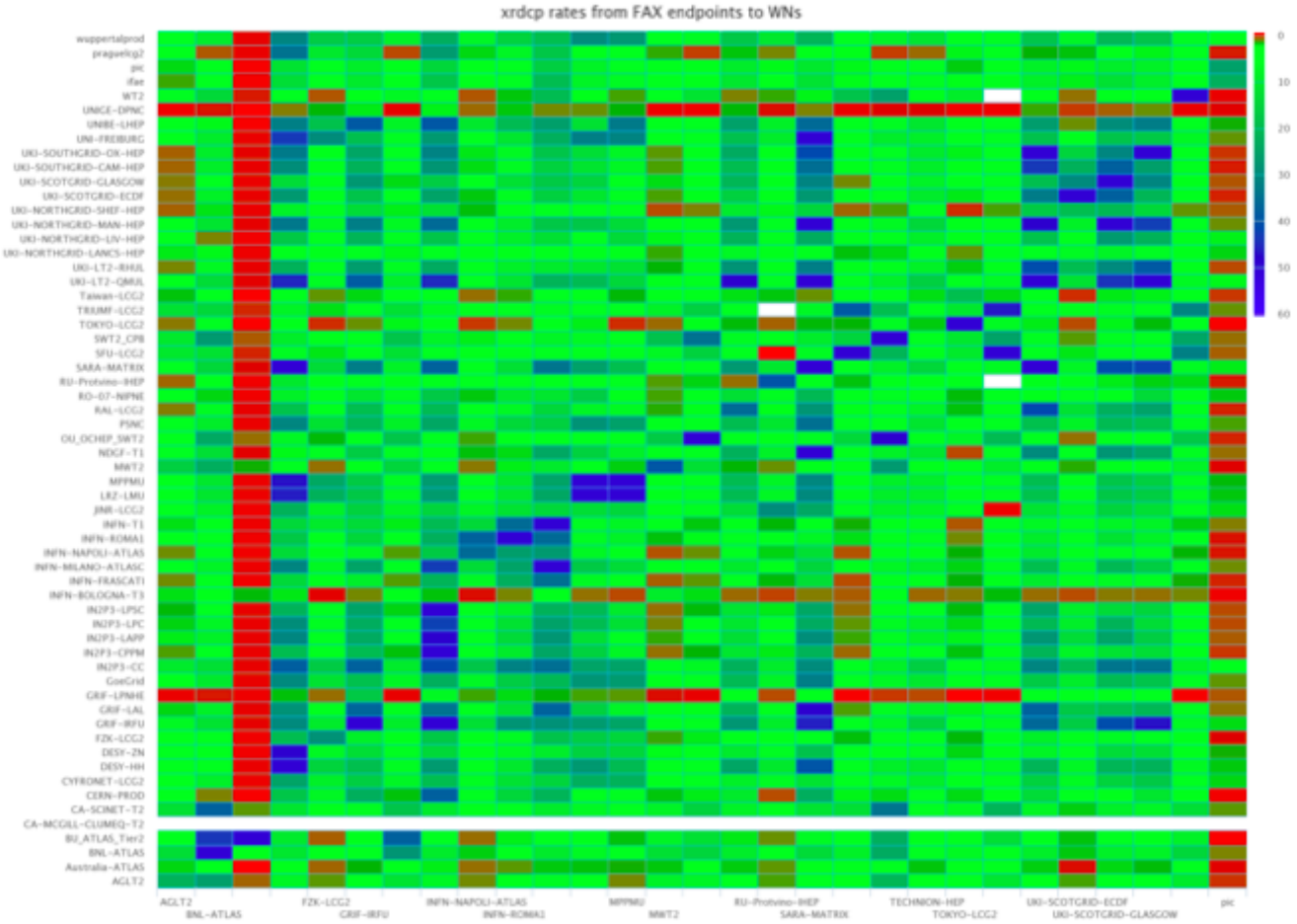
Cost Matrix

Ilija Vukotic

- Continuously measures rate of xrdcp transfers between all sets of endpoints
- Scale: red (0 MB/s) to blue (60 MB/s)
- Red bands are being investigated
- Good predictor of actual (xrdcp) job performance

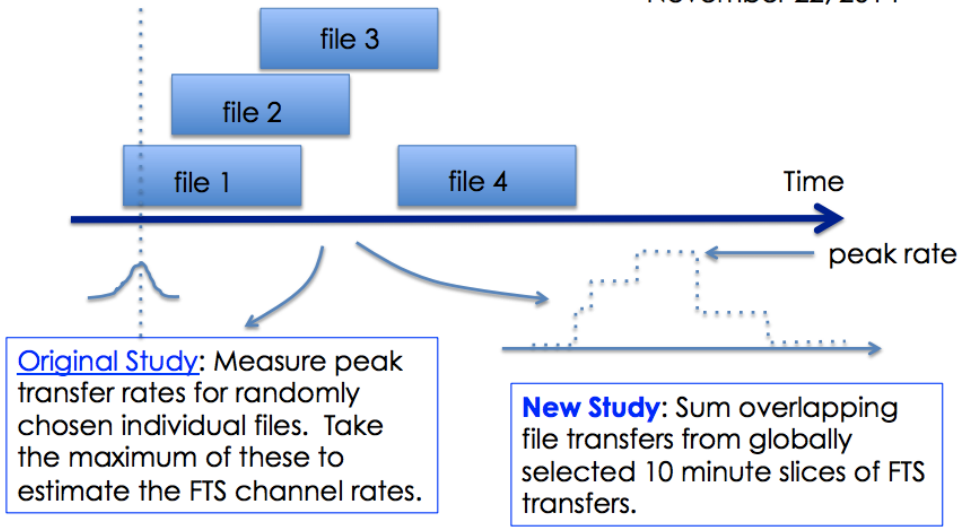


FTS WAN study - Saul Youssef

FTS/WAN Study & Tuning up for Run 2

Executive Summary

Saul Youssef
Boston University
November 22, 2014



Full study:

http://goo.gl/WaLrnz

Throughput between major centers not what it should be

FTS Channel Performance Issues

Tier 0 to Tier 1

1. pps.lcg.triumf.ca and bunsen.ndgf.org have poor rates everywhere **<10 MB/s**
2. T0 to NIKHEF, RU is poor **<10 MB/s**
3. srm-atlas.cern.ch is poor **<10 MB/s**

Tier 1 to Tier 1

CA
1. TRIUMF is not really getting 10Gb/s to any off-site T1 **<~300 MB/s**
2. ppshead.lcg.triumf.ca **<1 MB/s**

ES
1. PIC to SARA **<3 MB/s**

FR
1. Looks OK! **Near 10Gb/s or better to all 10 Gb/s T1s**

DE
1. FZK to TRIUMF **6 MB/s**
2. FZK to NIKHEF **1 MB/s**
3. FZK to PIC **1 MB/s**

IT
1. INFN to NIKHEF **3 MB/s**

UK
1. PIC **85 MB/s**
2. FZK **112 MB/s**

US
1. Looks OK! **Near 10Gb/s or better to all 10Gb/s T1s**

ND
1. bunsen.ndgf.org **<3 MB/s**
2. srm.ndfg.org to itself!? **2 MB/s**

TW
1. No 10Gb/s to any site

RU
1. RU to TRIUMF **28 MB/s**
2. RU to NIKHEF **18 MB/s**
3. RU to TW **3 MB/s**

FTS Channel Performance Issues

Tier 2D to Tier 1

CA
1. Westgrid to IN2P3, SARA **<10 MB/s**
2. Toronto to SARA, NIKHEF **<10 MB/s**
3. McGill to SARA **<2 MB/s**
4. Wormhole to NDGF, RAL **<3 MB/s**

ES
1. uam.es to INFN **<3 MB/s**
2. PIC to TRIUMF **<5 MB/s**
3. IFIC to INFN **<3 MB/s**

FR
1. LAL to FZK, INFN **<36 MB/s**
2. LPNSE to SARA, NIKHEF, NDGF **<1 MB/s**
3. LPSC to PIC **<1 MB/s**
4. Marsellie to TRIUMF, BNL **<10 MB/s**

DE
1. DESY to SARA **<1 MB/s**
2. Wuppertal to TRIUMF, NIKHEF **<1 MB/s**
3. lcg-se0.ifh.de to INFN **<1 MB/s**
4. Goegrid to IN2P3, INFIN **<10 MB/s**

IT
1. ROMA to NIKHEF **<10 MB/s**
2. INFN to SARA, FZK, RAL **<20 MB/s**

UK
1. Manchester to TRIUMF **18 MB/s**
2. HEPLNX to INFN **4 MB/s**
3. QMUL o SARA,NIKHEF **<1MB/s**
4. Cambridge to BNL **<1MB/s**
5. Glite to NDGF **<10MB/s**
6. SCOTGRID to TRIUMF, NIKHEF **<10MB/s**

US
1. NET2 to NIKHEF **<1MB/s**
2. SWT2 to RAL **<30MB/s**
3. NET2, SWT2, AGLT2, WT2 have worse rates to SARA than to other T1s **(74,29,10,17,54 MB/s)**

Summary and recommendations

- FTS throughput studies are being automated with higher statistics - so far they show the same pattern. c.f.:

  http://egg.bu.edu/atlas/studies%7btype:egg.Hatch%7d/FTS_November_2014_bonus/

- Surprising(?) amount of throughput testing is needed in advance of Run-2