

# GridPP

UK Computing for Particle Physics

## Recent Imperial experiences with FTS3

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- We have a dual-stack FTS3 server for testing purposes
- We recently installed new switches in our machine room
- We are now able to identify and display IPv4 and IPv6 traffic
- It is useful to be able identify whether IPv6 is actually being used!

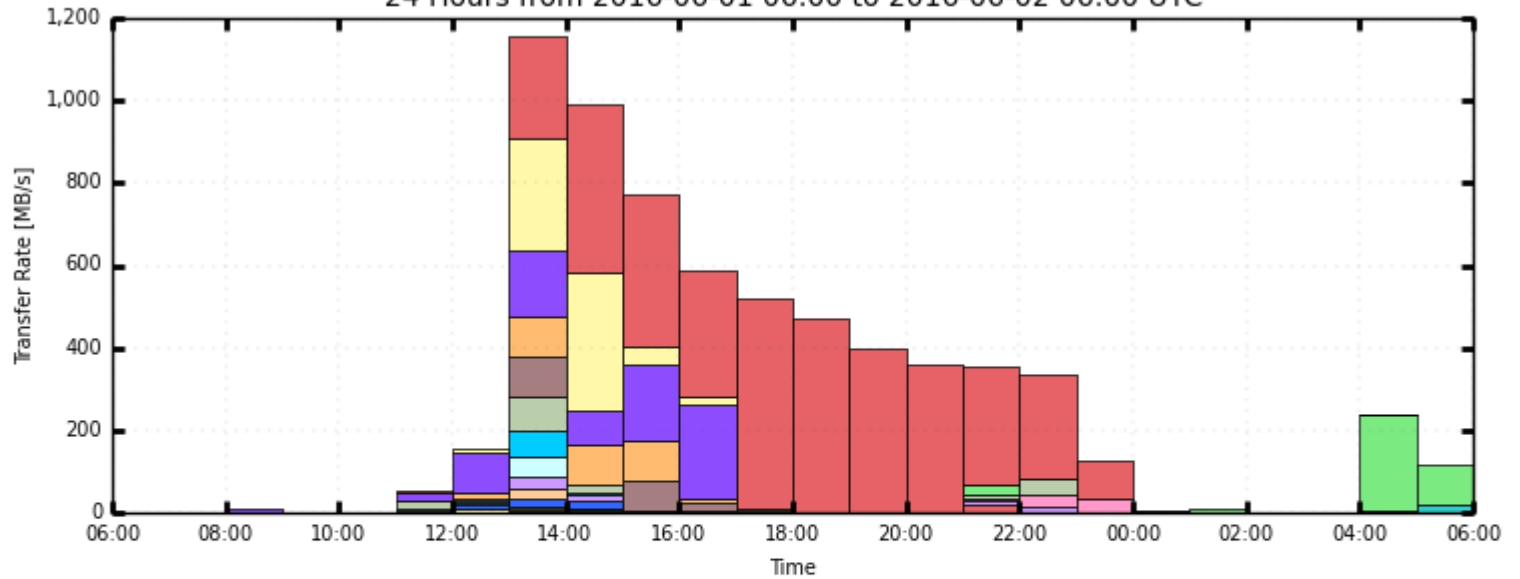
Large transfer to Imperial

Much of it from PIC

PIC and Imperial both dual-stack storage

### CMS PhEDEx - Transfer Rate

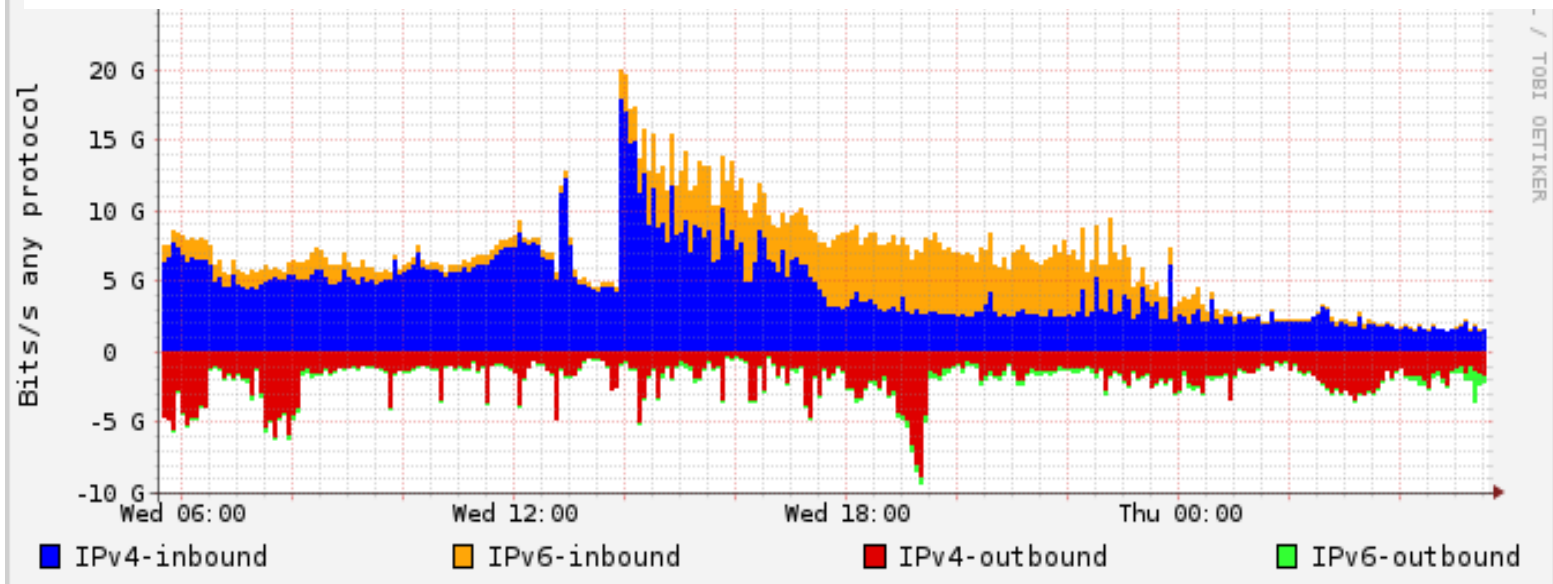
24 Hours from 2016-06-01 06:00 to 2016-06-02 06:00 UTC



- T1\_ES\_PIC\_Disk to T2\_UK\_London\_IC
- T0\_CH\_CERN\_Export to T2\_UK\_London\_IC
- T2\_US\_MIT to T2\_UK\_London\_IC
- T1\_US\_FNAL\_Disk to T2\_UK\_London\_IC
- T1\_FR\_CCIN2P3\_Disk to T2\_UK\_London\_IC
- T2\_IT\_Legnaro to T2\_UK\_London\_IC
- T0\_CH\_CERN\_Disk to T2\_UK\_London\_IC
- T1\_FR\_CCIN2P3\_Buffer to T2\_UK\_London\_IC
- T2\_DE\_RWTH to T2\_UK\_London\_IC
- T2\_IT\_Pisa to T2\_UK\_London\_IC
- T2\_CH\_CERN to T2\_UK\_London\_IC
- T1\_IT\_CNAF\_Disk to T2\_UK\_London\_IC
- T1\_RU\_JINR\_Disk to T2\_UK\_London\_IC
- T2\_US\_Nebraska to T2\_UK\_London\_IC
- T1\_IT\_CNAF\_Buffer to T2\_UK\_London\_IC
- T2\_DE\_DESY to T2\_UK\_London\_IC
- T1\_US\_FNAL\_Buffer to T2\_UK\_London\_IC
- T2\_UK\_SGrid\_RALPP to T2\_UK\_London\_IC
- T2\_US\_Caltech to T2\_UK\_London\_IC
- ... plus 14 more

Maximum: 1,158 MB/s, Minimum: 0.00 MB/s, Average: 350.96 MB/s, Current: 118.91 MB/s

Orange shows IPv6 inbound transfers



/ TOBI OETIKER

Delegation ID: f1f4a879780f2fdf  
 Submitted time: 2016-06-01T17:40:13  
 Job finished: 2016-06-01T19:21:18  
 Priority: 1  
 Bring online: -1

Received by fts00.grid.hep.ph.ic.ac.uk  
 Overwrite flag:  
 Reuse sessions: N  
 Cancel flag:  
 Pin lifetime: -1

Metadata:

Total size	Done	Submission time	Start time	Running time	Avg. file throughput	Current job throughput
83.68 GiB	83.68 GiB	2016-06-01T17:40:13	2016-06-01T18:28:59 (+2926s)	175 s	20.19 MB/s	-

Showing 1 to 25 out of 25

[SUBMITTED](#)
[DELETE](#)
[READY](#)
[STAGING](#)
[ACTIVE](#)
[STARTED](#)
[CANCELED](#)
[FAILED](#)
[25 FINISHED](#)
[NOT\\_USED](#)

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[1](#)
[Next](#)
[Last](#)

File ID	Source URL	Destination URL	File State	File Size	Throughput	Remaining	Start Time	Finish Time	Staging Start	Staging End
+ 1147516	srm://srmcms.pic.es:8443 /srm/managerv2?SFN= /pnfs/pic.es/data/cms /disk/store /mc/RunIISpring16DR80 /QCD_HT100to200_TuneCUETP8M1-13TeV- madgraphMLM-pythia8 /AODSIM /PUSpring16_80X_mcRun2_asymptotic_2016_v3- v1/70000/081D79A7-8515- E611-895E- 6CC2173BC370.root	srm://gfe02.grid.hep.ph.ic.ac.uk:8443 /srm/managerv2?SFN= /pnfs/hep.ph.ic.ac.uk /data/cms/store /mc/RunIISpring16DR80 /QCD_HT100to200_TuneCUETP8M1-13TeV- madgraphMLM-pythia8 /AODSIM /PUSpring16_80X_mcRun2_asymptotic_2016_v3- v1/70000/081D79A7-8515- E611-895E- 6CC2173BC370.root	FINISHED	4.03 GiB	24.11 MB/s	-	2016-06-01T18:28:5	2016-06-01T18:31:5		

- Required FTS settings

```
# enable or disable the ipv6 support  
IPV6=true
```

```
# Enable the PASV plugin  
# Required to trigger events with the final destination IP and port  
ENABLE_PASV_PLUGIN=true
```

- PIC (dCache) to Imperial (dCache)

Wed Jun 1 14:30:57 2016 DEBUG Event triggered: BOTH GSIFTP TRANSFER:ENTER ([2001:67c:1148:201::13]:2811)  
gsiftp://door03.pic.es:2811//pnfs/pic.es/data/cms/disk/store/mc/RunIIISpring16DR80/QCD\_HT100to200\_TuneCUETP8M1\_13TeV-  
madgraphMLM-pythia8/AODSIM/PUSpring16\_80X\_mcRun2\_asymptotic\_2016\_v3-v1/60000/24EC8D21-5616-E611-81B9-  
00266CFFC044.root => ([2001:630:12:580:a236:9fff:fe2c:8e6c]:2811) gsiftp://sedsk66.grid.hep.ph.ic.ac.uk:2811//upload/9/5abd2880-  
a104-4685-991c-01ec5cb1835b/24EC8D21-5616-E611-81B9-00266CFFC044.root

Wed Jun 1 14:30:58 2016 INFO [1464787858728] DST GSIFTP PASV sedsk66.grid.hep.ph.ic.ac.uk:2001:63:24363

Wed Jun 1 14:30:58 2016 DEBUG Event triggered: DESTINATION GSIFTP PASV sedsk66.grid.hep.ph.ic.ac.uk:2001:63:24363

Wed Jun 1 14:32:08 2016 INFO bytes: 1254316748, avg KB/sec:17498, inst KB/sec:17498, elapsed:70

Wed Jun 1 14:33:18 2016 INFO bytes: 2621841216, avg KB/sec:18288, inst KB/sec:19078, elapsed:140

Wed Jun 1 14:33:48 2016 INFO bytes: 3114026411, avg KB/sec:17962, inst KB/sec:16404, elapsed:170

- Nebraska (Bestman/hdfs) to Imperial transfers

Wed Jun 1 13:55:12 2016 DEBUG Event triggered: BOTH GSIFTP TRANSFER:ENTER ([2600:900:6:1101::da7a:1055]:2811)  
gsiftp://red-  
gridftp.unl.edu:2811//mnt/hadoop/user/uscms01/pnfs/unl.edu/data4/cms/store/mc/RunIIISpring16DR80/QCD\_HT200to300\_TuneCUETP  
8M1\_13TeV-madgraphMLM-pythia8/AODSIM/PUSpring16\_80X\_mcRun2\_asymptotic\_2016\_v3-v1/30000/7E0D4619-DD09-E611-  
A6A1-000F53273494.root => ([2001:630:12:580:92e2:baff:fe20:1b44]:2811)  
gsiftp://sedsk55.grid.hep.ph.ic.ac.uk:2811//upload/0/ea0c83e1-e367-41fa-bc95-1ee60767904b/7E0D4619-DD09-E611-A6A1-  
000F53273494.root

Wed Jun 1 13:55:15 2016 INFO [1464785715670] DST GSIFTP PASV sedsk55.grid.hep.ph.ic.ac.uk:2001:63:24375

Wed Jun 1 13:55:15 2016 DEBUG Event triggered: DESTINATION GSIFTP PASV sedsk55.grid.hep.ph.ic.ac.uk:2001:63:24375

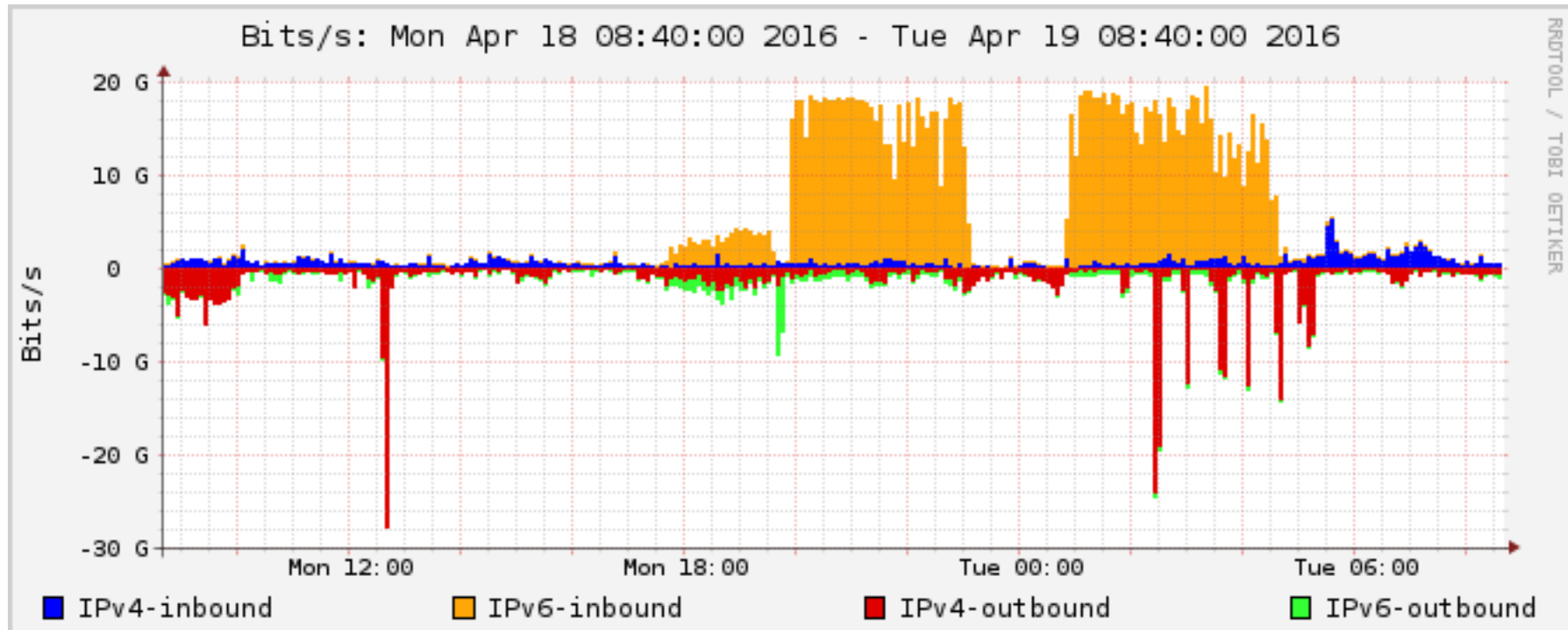
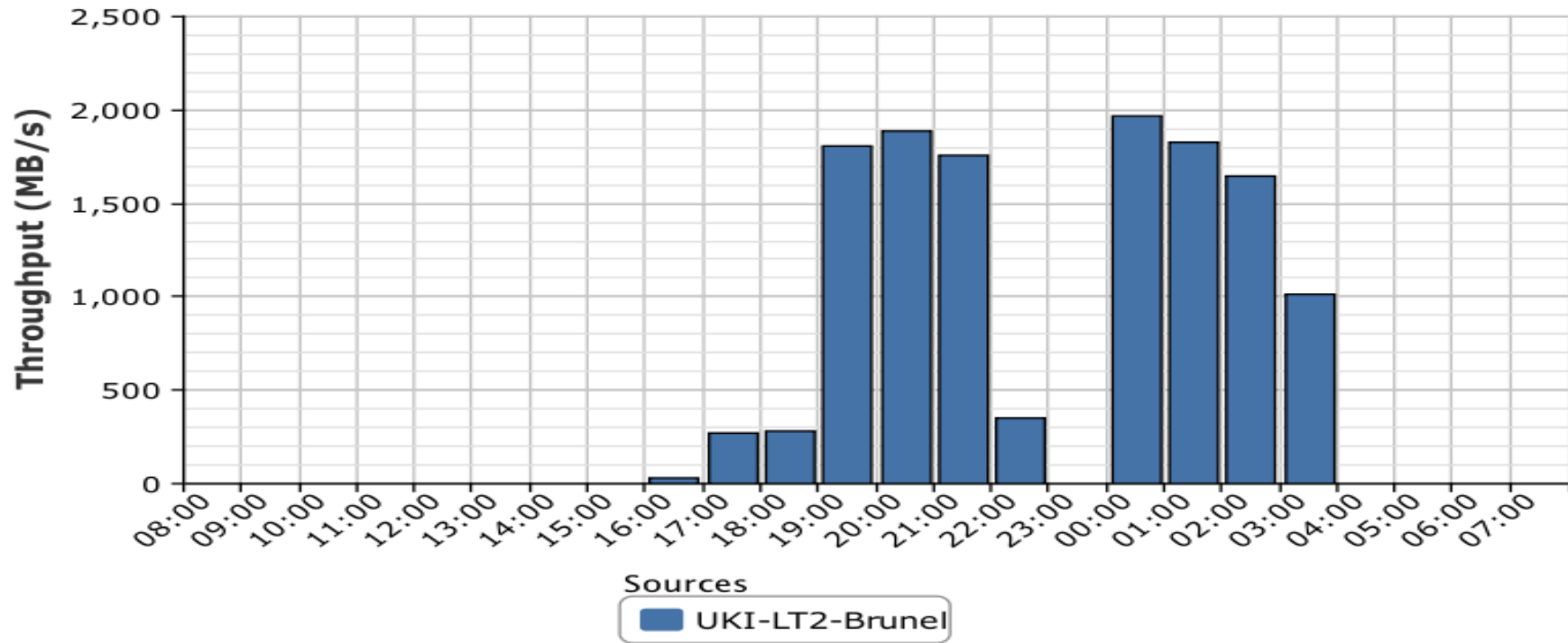
- PIC to Brunel (DPM) transfers

```
Wed Jun 1 14:30:23 2016 DEBUG Event triggered: BOTH GSIFTP TRANSFER:ENTER ([2001:67c:1148:201::15]:2811)
gsiftp://door05.pic.es:2811//pnfs/pic.es/data/cms/disk/store/mc/RunIIISummer15GS/QCD_HT100to200_TuneCUETP8M1_13TeV-madgraphMLM-
pythia8/GEN-SIM/MCRUN2_71_V1-v1/30000/72540B74-C05D-E511-AEA3-0025905964BE.root => ([2001:630:10:f00e::8007]:0) gsiftp://dc2-grid-
srv-007.brunel.ac.uk/dc2-grid-srv-007.brunel.ac.uk:/data0/dpmfs/cms/2016-06-01/72540B74-C05D-E511-AEA3-0025905964BE.root.83643227.0
Wed Jun 1 14:30:24 2016 INFO [1464787824086] DST GSIFTP PASV dc2-grid-srv-007.brunel.ac.uk:[2001:630:10:f00e::8007]:21056
Wed Jun 1 14:30:24 2016 DEBUG Event triggered: DESTINATION GSIFTP PASV dc2-grid-srv-007.brunel.ac.uk:
[2001:630:10:f00e::8007]:21056
```

- Imperial to Brunel transfers

```
Wed Jun 1 12:08:46 2016 INFO [1464779326387] BTH GSIFTP TRANSFER:ENTER ([2001:630:12:580:92e2:baff:fe20:1808]:2811)
gsiftp://sedsk54.grid.hep.ph.ic.ac.uk:2811//pnfs/hep.ph.ic.ac.uk/data/cms/LoadTest07/LoadTest07_London_IC_HEP_27 =>
([2001:630:10:f00e::8004]:0) gsiftp://dc2-grid-srv-004.brunel.ac.uk/dc2-grid-srv-004.brunel.ac.uk:/data0/dpmfs/cms/2016-06-
01/LoadTest07_London_IC_HEP_27_K9qDc6Jh8P8xNo04_950.83639017.0
Wed Jun 1 12:08:46 2016 DEBUG Event triggered: BOTH GSIFTP TRANSFER:ENTER ([2001:630:12:580:92e2:baff:fe20:1808]:2811)
gsiftp://sedsk54.grid.hep.ph.ic.ac.uk:2811//pnfs/hep.ph.ic.ac.uk/data/cms/LoadTest07/LoadTest07_London_IC_HEP_27 =>
([2001:630:10:f00e::8004]:0) gsiftp://dc2-grid-srv-004.brunel.ac.uk/dc2-grid-srv-004.brunel.ac.uk:/data0/dpmfs/cms/2016-06-
01/LoadTest07_London_IC_HEP_27_K9qDc6Jh8P8xNo04_950.83639017.0
Wed Jun 1 12:08:47 2016 INFO [1464779327051] DST GSIFTP PASV dc2-grid-srv-004.brunel.ac.uk:[2001:630:10:f00e::8004]:20971
Wed Jun 1 12:08:47 2016 DEBUG Event triggered: DESTINATION GSIFTP PASV dc2-grid-srv-004.brunel.ac.uk:
[2001:630:10:f00e::8004]:20971
```

2016-04-18 08:00 to 2016-04-19 08:00 UTC





- If we are going to allow sites to run IPv6-only WN from April they will probably be reading data from dual-stack storage using xrootd
- So sites and other components of the WLCG need to gain experience in running dual-stack storage
- It would make sense to increase the proportion of FTS transfers using IPv6
  
- CERN has a pilot dual-stack FTS service ([fts3-pilot.cern.ch](https://fts3-pilot.cern.ch))