



CERN T0 tape outlook for HI run

2024-09-26 - Julien Leduc for CTA team

Total available throughput for LHC experiments: 40GB/s

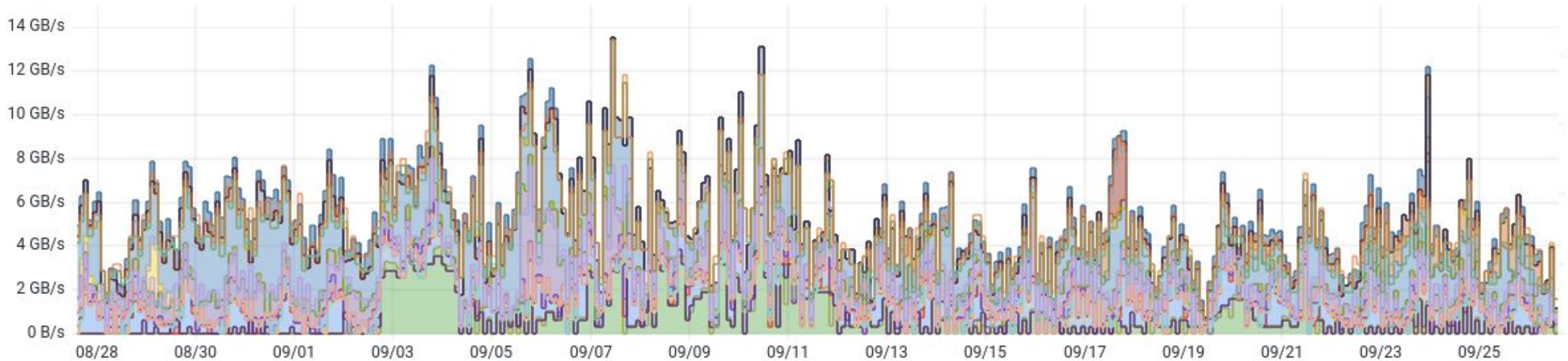
- **Per LHC experiment:**
 - SLA bandwidth to tape per LHC experiment: **10GB/s**
 - Maximum 20GB/s on a single instance (subject to total bandwidth constraints)
 - Archive tape buffer of approximately 200TB
- **Total shared throughput to tape:**
 - 60GB/s distributed over 6 tape libraries
 - Meant to cover library/drive losses:
 - 1 library loss removes 10GB/s of throughput leaving T0 tape with 50GB/s of throughput
 - Guarantees LHC traffic 4x10GB/s + non LHC traffic (8-10 GB/s)

**Depending on tape hardware availability and non LHC traffic:
40 GB/s shared between LHC experiments**

10 to 20 GB/s of archive traffic per experiment depending on others activity

Non LHC archive traffic: 8GB/s reserved

- **Up to 13GB/s of throughput over last 30 days**
 - SMEs
 - various backups to CTA
- **CTA must reserve 8-10GB/s for non LHC traffic**



Additional throughput above 10GB/s SLA is on Best Effort basis

- **Archive Best Effort over SLA rules**
 - No tape staging allowed in the previous envelope
 - Assumes all tape hardware dedicated to archival
 - Staging activities will be delayed outside of archive peaks with low rate
 - Lowered staging rate according to global archival needs
 - **Experiments with high priority staging will get lower archive throughput**
 - for example: 3 drives allocated for staging means 1GB/s of archival bandwidth removed for this experiment

Best Effort archive throughput example



- **CMS**
 - Max: 18.2 GB/s Avg: 8.22 GB/s

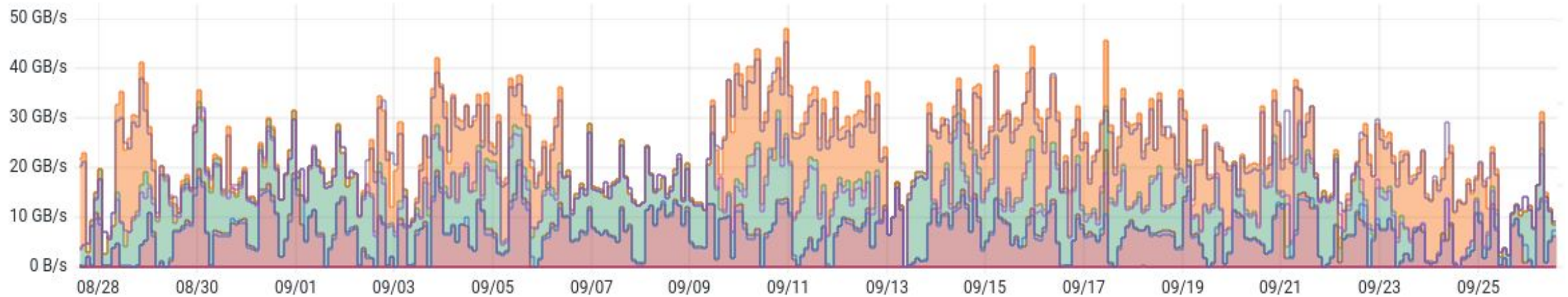
Best Effort archive throughput examples



- **LHCb**

- Max: 25.9 GB/s Avg: 8.14 GB/s
- Best effort maximum arbitrated around 15GB/s during p-p

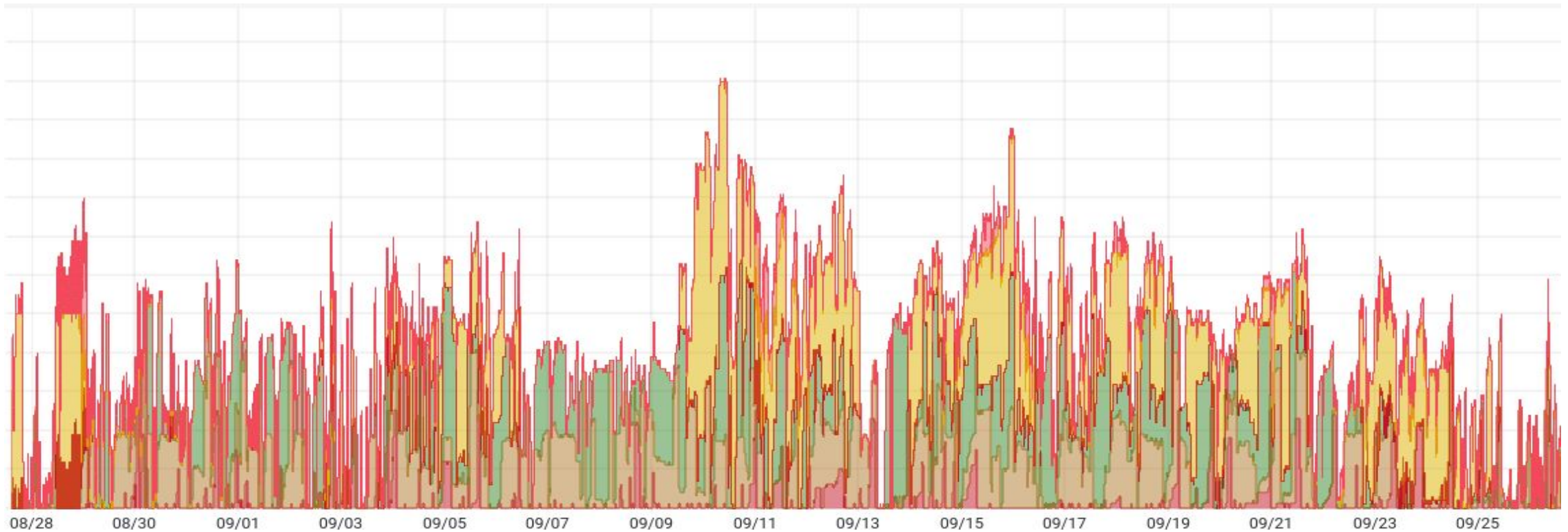
Best Effort archive throughput examples



- **LHCb**

- Max: 25.9 GB/s Avg: 8.14 GB/s
- Best effort maximum arbitrated around 15GB/s during p-p

Move non DAQ traffic (derived data/MC data) after HI whenever possible



- **Various shades of red for non DAQ traffic**
 - Preferably move these data transfers after HI