# DTN and Data Movement Focus Group

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# Updates from PRAGMA36

- Goal: We explore solutions to transfer big data (securely) among PRAGMA Clouds and share best practices.
- Possible solutions:
  - DTN (Data Transfer Node): e.g., FIONA@PRP
  - AWS S3-based cloud storage: e.g., Ceph, Sality
- Progress:
  - Set up DTN nodes on UCSD and AIST
  - Transfer zebrafish brain image data: avg. 6.4Gbps

# Discussion on PRAGMA37

- Look back on UCSD-ABCI experiment
- What is the definition of DTN?
- Jim Chen gave us  his GRP workshop talk “Starlight DTN-as-a-Service, A GRP Service Prototype”
- Software stack of DTN
  - File transfer: BigData Express, nuttcp
  - Monitoring: perfSONAR
  - DTN-as-a-Service@Starlight
- OSG data federation (CDN)

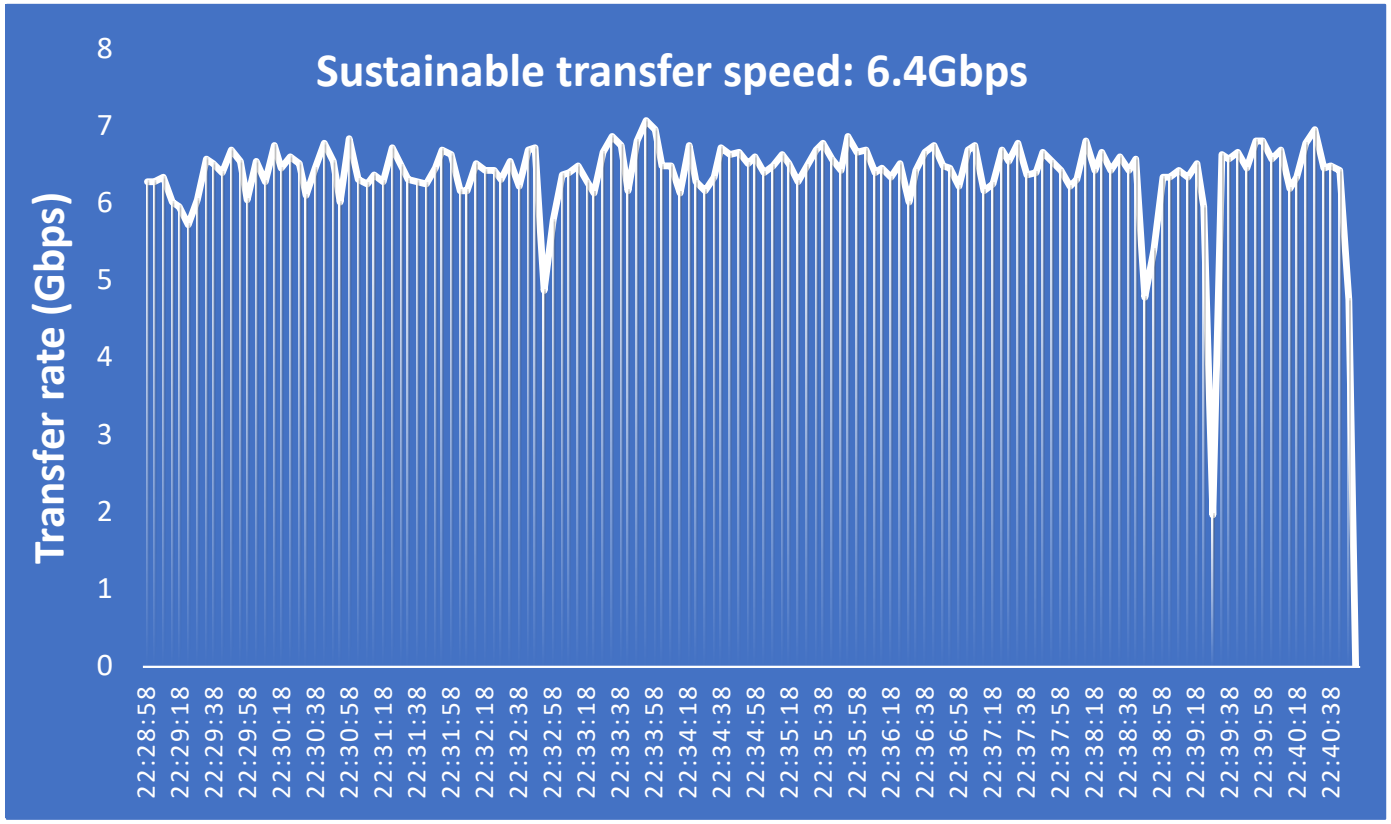
# What's next toward PRAGMA38

- Expand DTN experiment
  - AIST, UCSD + **Starlight, Osaka U**, (Indiana U, Indonesia U?)
  - Collaboration with **PRAGMA-ENT**

- Other approaches: object storage, distributed cache
  - Collaboration with **AI focus group**

AQUAFINA

# Disk-to-Disk data transfer experiment from UCSD to ABCI




- Total data size: 574GB
- File size: 193MB
- Number of files: 2977
- Elapsed time: 12m10s

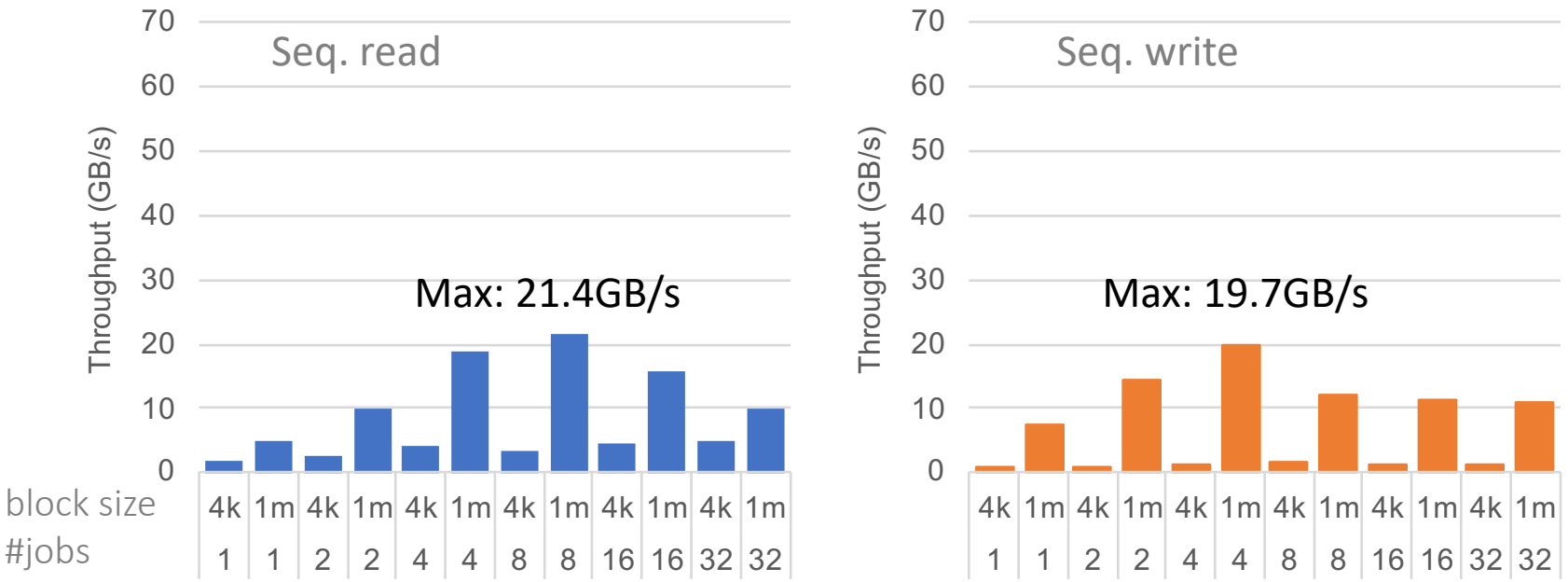
- Tool: FDT version 0.26.1

*) Zebrafish brain image raw data

# Disk I/O perf. on UCSD and ABCI

| | UCSD DTN | ABCI@AIST DTN |
|---|---|---|
| CPU | Xeon E5-1620 v3 @ 3.50GHz | Xeon E5-2640 v4 @ 2.40GHz x2 |
| Memory | 32GB | 256GB |
| NIC | Myri-10G x2 | InfiniBand EDR x2 |
| OS | CentOS 7.4.1708 | RHEL 7.4 |
| Storage | ZFS | Spectrum Scale (GPFS) |

fio benchmark version 3.15 (w/o directIO)



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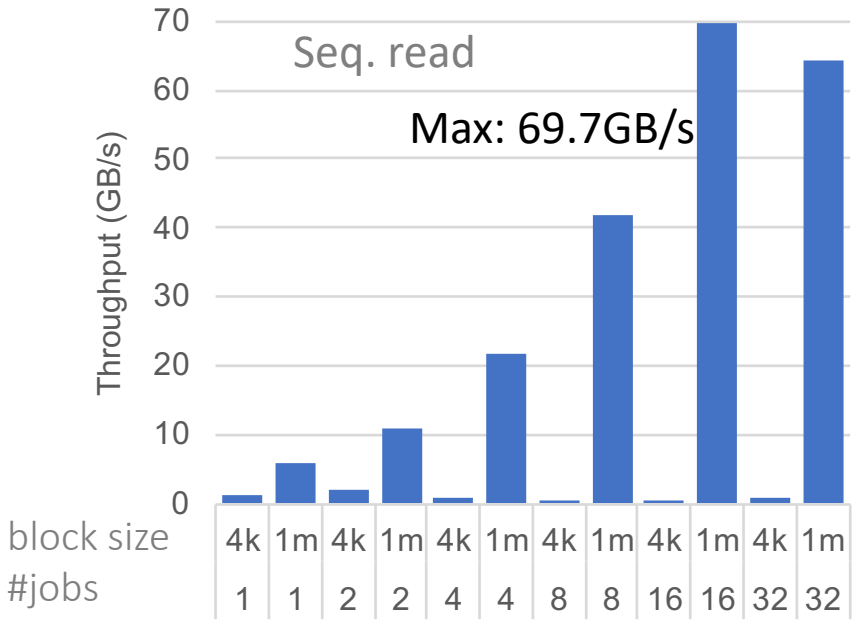


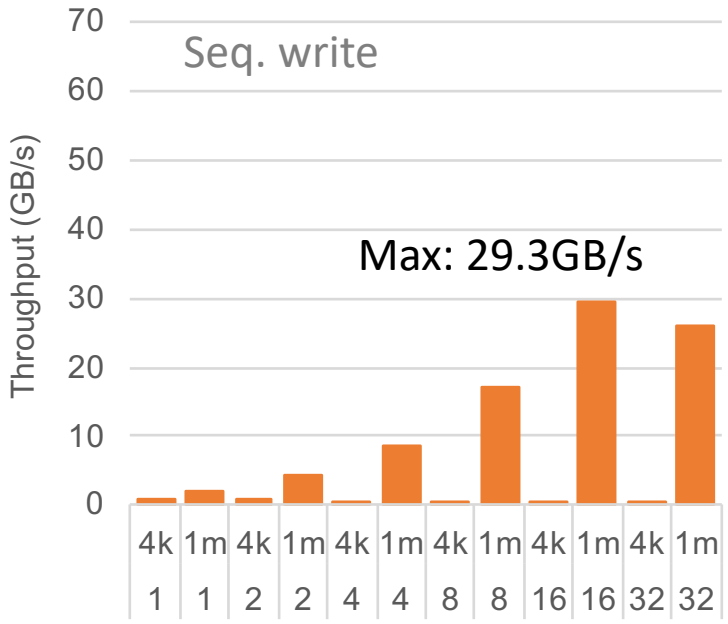
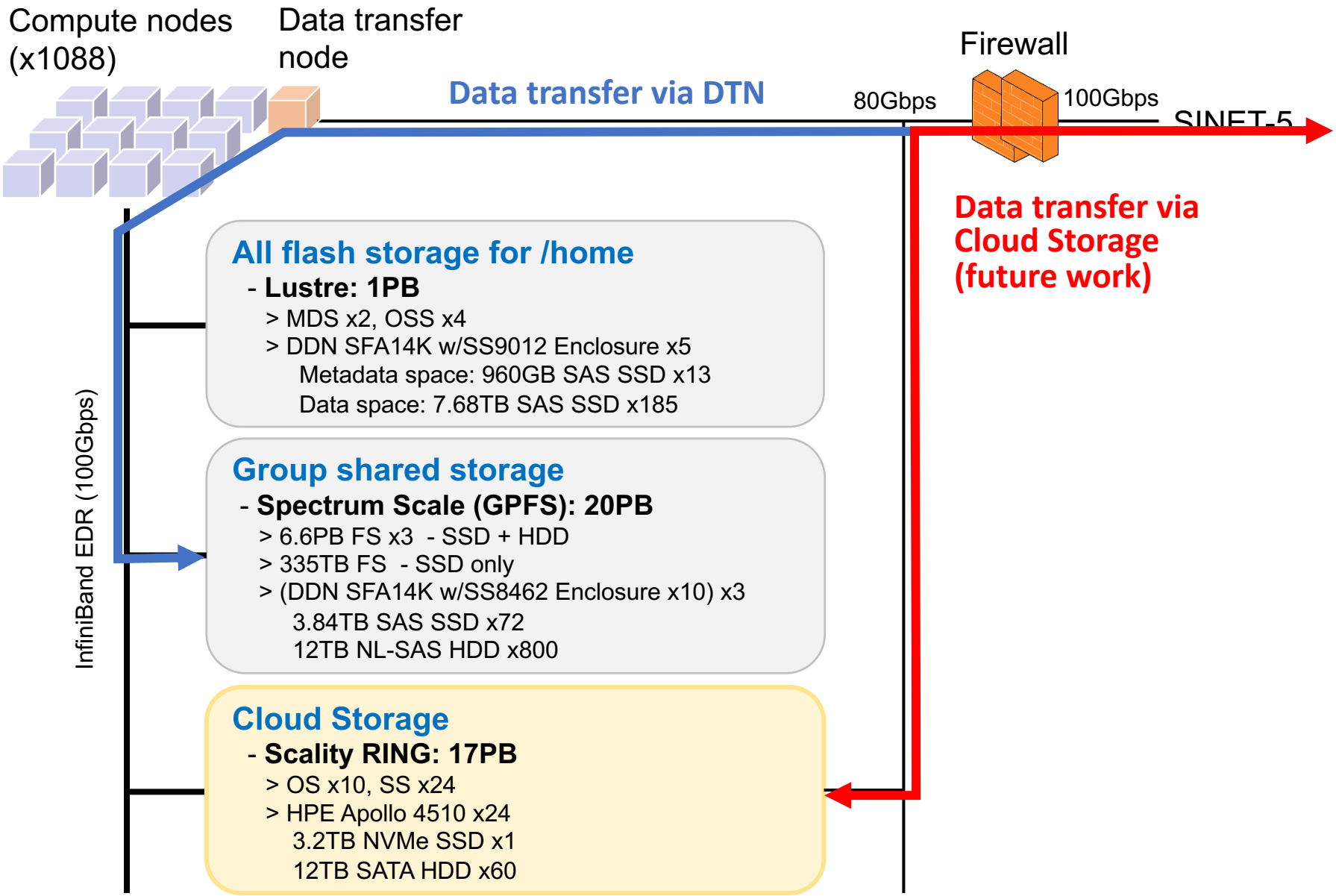
# ABCI Storage System