

# Stress testing an Pelican/OSDF Origin

# OSDF DevOps

- Current OSDF state



# OSDF DevOps

- Close to 40 hosts across more than 35 institutions.
- Close to 50 pods.
- 3 deployments models:
  - K8S
  - Docker
  - RPM





# Why

- What are the XrootD limits?
- How many streams are necessary to use an xGbs network fully?
- What is the best configuration for XrootD using the x HW?
- How much “cost” to use K8S?

Each item has an impact (1 to 5) and complexity (1 to 5) to be completed.

The impact is related to improving the service availability, security, new features, user experience, etc.

The complexity is related to the required time to create the test case and the time to run the time.

# File transfer from an origin to a client.

Impact: 5

Complexity: 3

Description. Test the transfer rate using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) using 1, 8, 32, 64, 128 to N streams (where N is the number of parallel transfers) in the LAN and the WAN, using at least three significantly different RTT values.

Check throughput for various RTTs and some async settings. This will inform us if we should make this more configurable, either through opaque parameters or automatically, based on detected RTT also, check the transfer rate using different clients (wget, curl, pelican) and HTCondor jobs. This set of tests should be able to create a transfer rate base.



# How XrootD behaves with a High load on CPU and IO for 24 hours.

**Impact: 3**

**Complexity: 3**

**Description** Check the number of errors or problems on the logs and on the requests with file requests using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB), document how the main storage is mounted, check IO load, and other software configurations.

**Check the best resource configuration between K8S Pod, host resources, and XrootD parameters.**

**Impact: 2**

**Complexity: 3**

**Description: Checking the balance between the host resources and the POD resources using different kinds of tests.**

**Check the transfer rate difference between an origin access and the closest cache**

**Complexity: 3**

**Impact: 3**

**Description. Check the transfer rate difference between origin access and the closest cache, using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) and test the evict function on the cache.**

**Check the transfer rate related to the storage type.**

**Complexity: 3**

**Impact: 5**

**Description Test the transfer rate using SSD and HDD (RAID and accessing the driver directly) using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) using 1, 2, 4, and 8 streams.**

# Check the transfer rate between an authenticated and unauthenticated

Complexity: 3

Impact: 5

Description. Check the transfer rate between an authenticated and unauthenticated, using tokens, CVMFS (auth or not), or certificate and using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) using 1, 2, 4, and 8 streams.

# Check the overhead of tokens

Complexity: 3

Impact: 5

Description. Check the overhead of tokens, generate X unique tokens to avoid cache and see how quickly XRootD can authorize them.

**Check the transfer rate using HTTP Third party copy.**

**Complexity: 3**

**Impact: 5**

**Check the transfer rate using HTTP Third party copy using tokens or certificates and using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) using 1, 2, 4, and 8 streams.**

**Check the performance of EL7 vs EL9 as K8S OS POD.**

**Complexity: 3**

**Impact: 4**

**Description. Test the transfer rate using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) using 1, 2, 4, and 8 streams and EL7 vs EL9 as K8S OS POD.**



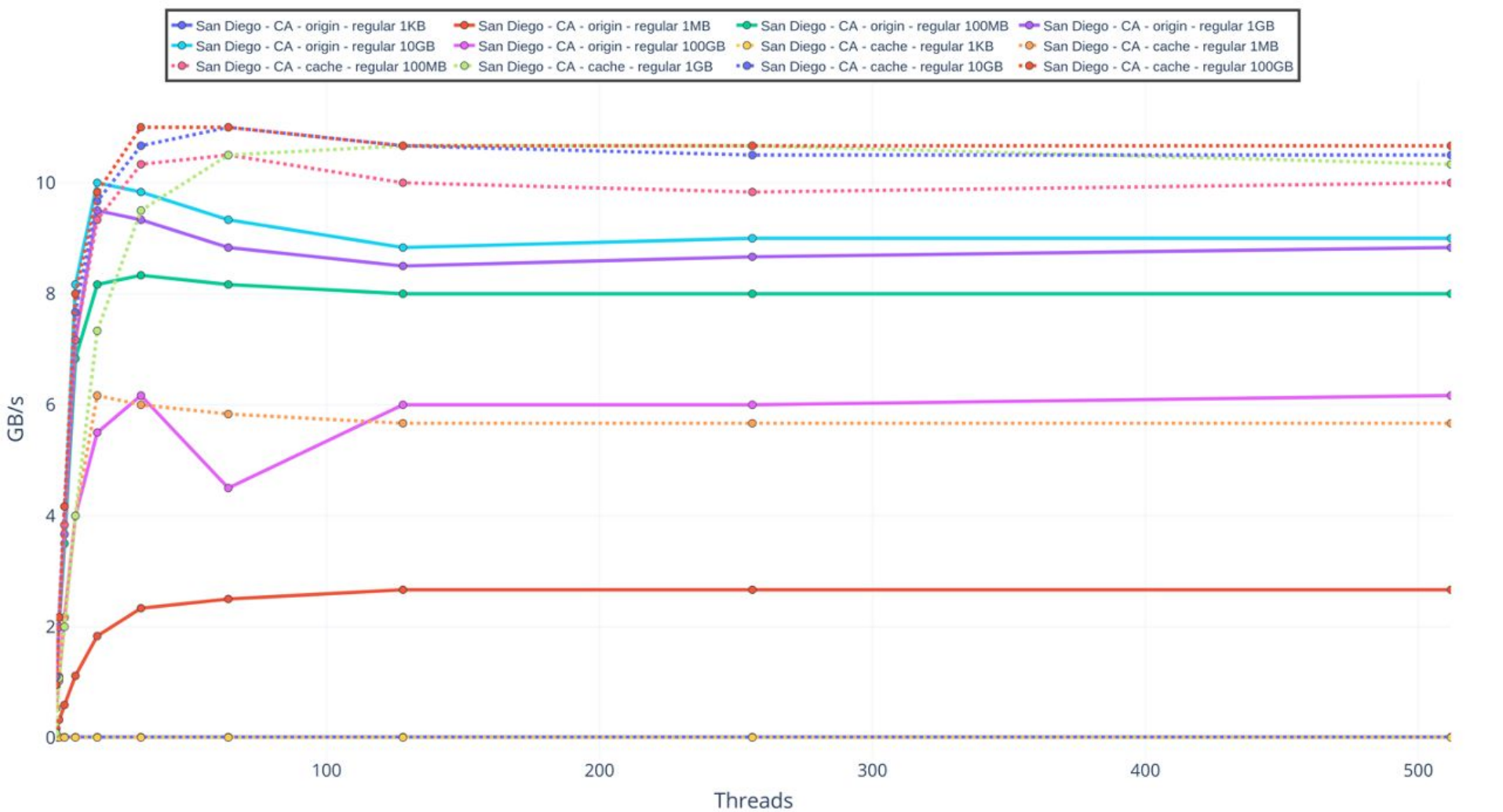
**Check how the redirector performs, as well as the architecture, and improve the monitoring.**

**Complexity: 3**

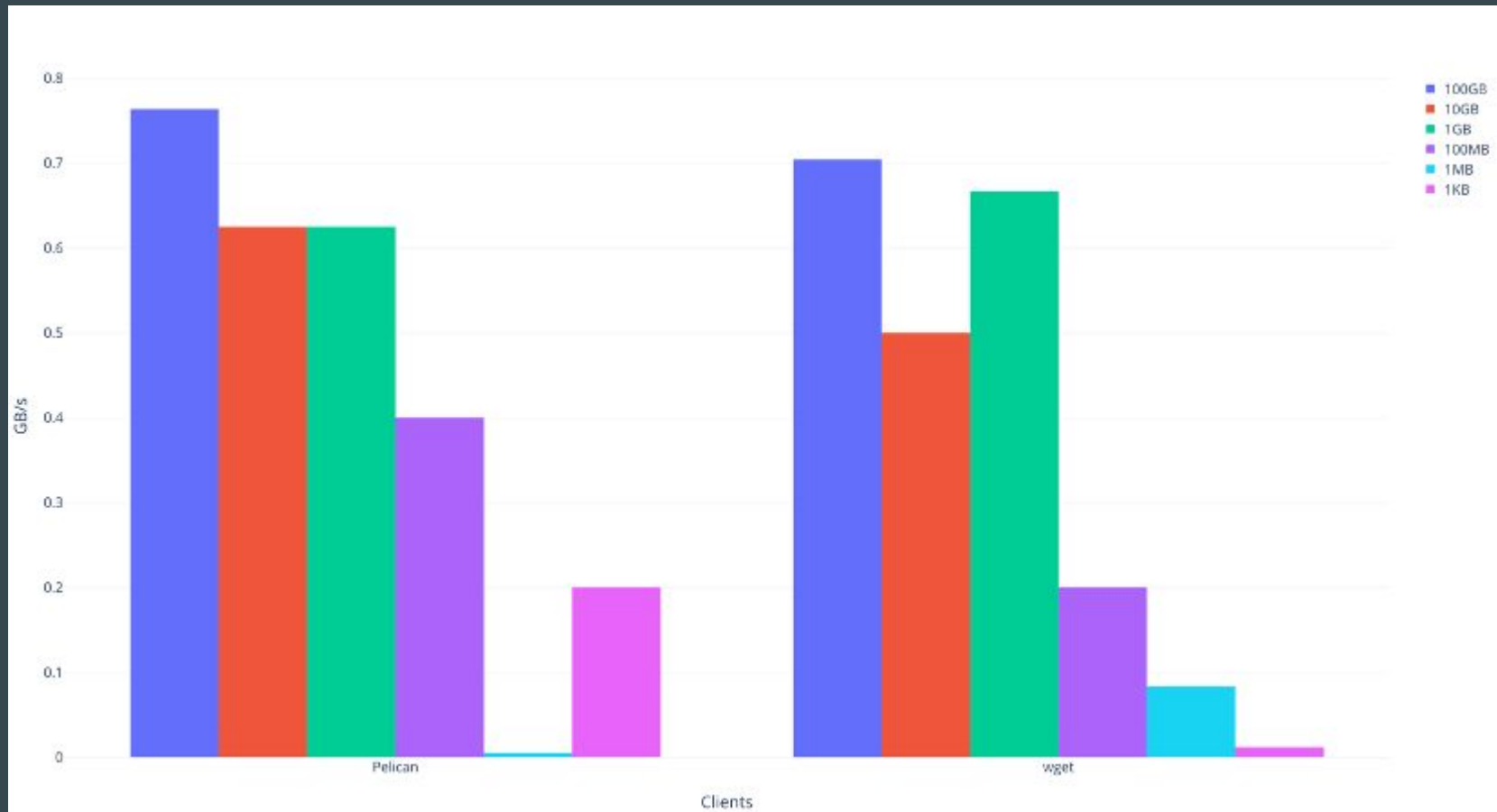
**Impact: 4**

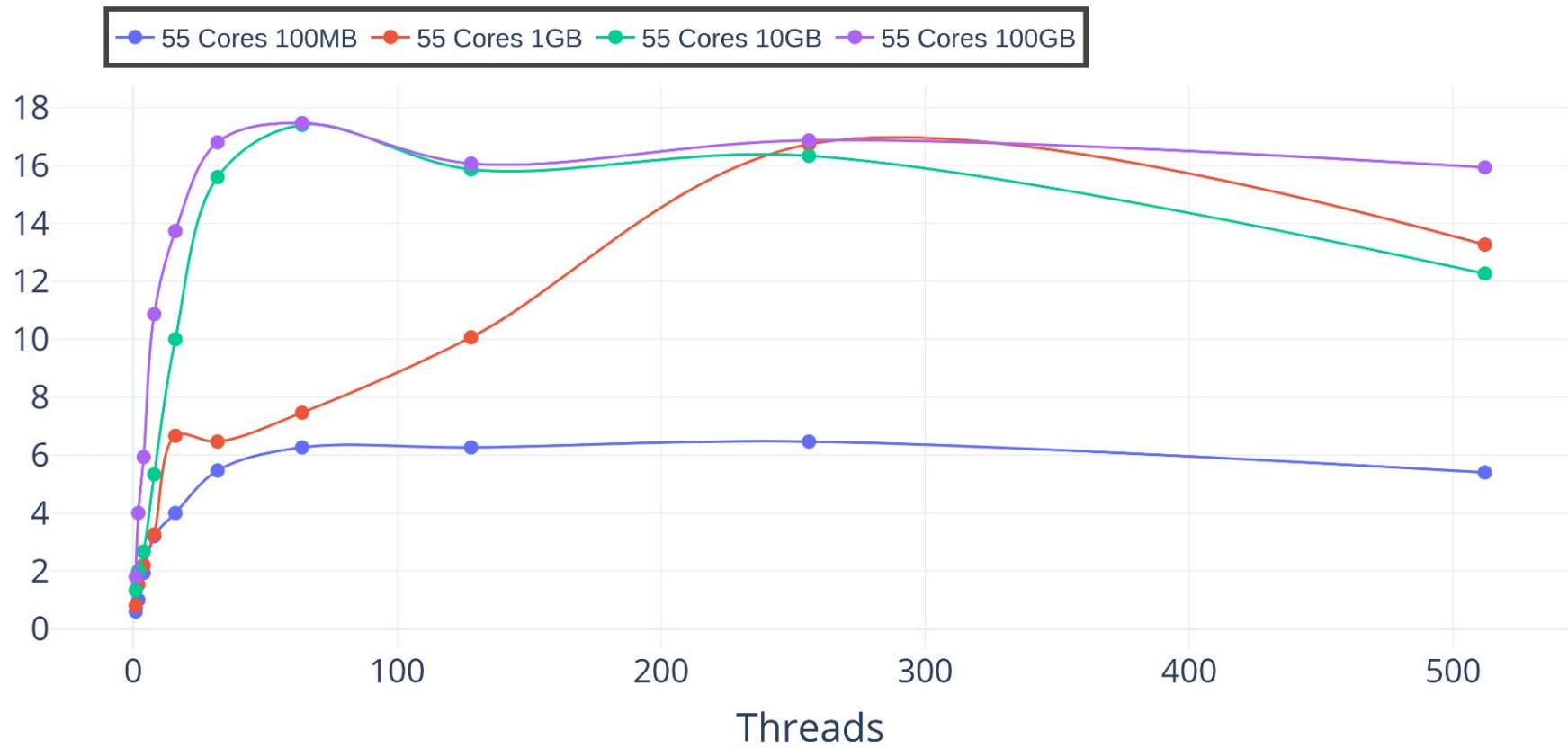
**Description. Test the transfer rate using six file sizes (1KB, 1MB, 100MB, 1GB, 10GB, 100GB) using 1, 2, 4, and 8 streams and EL7 vs EL9 as K8S OS POD forcing the redirector be used in each transfer.**

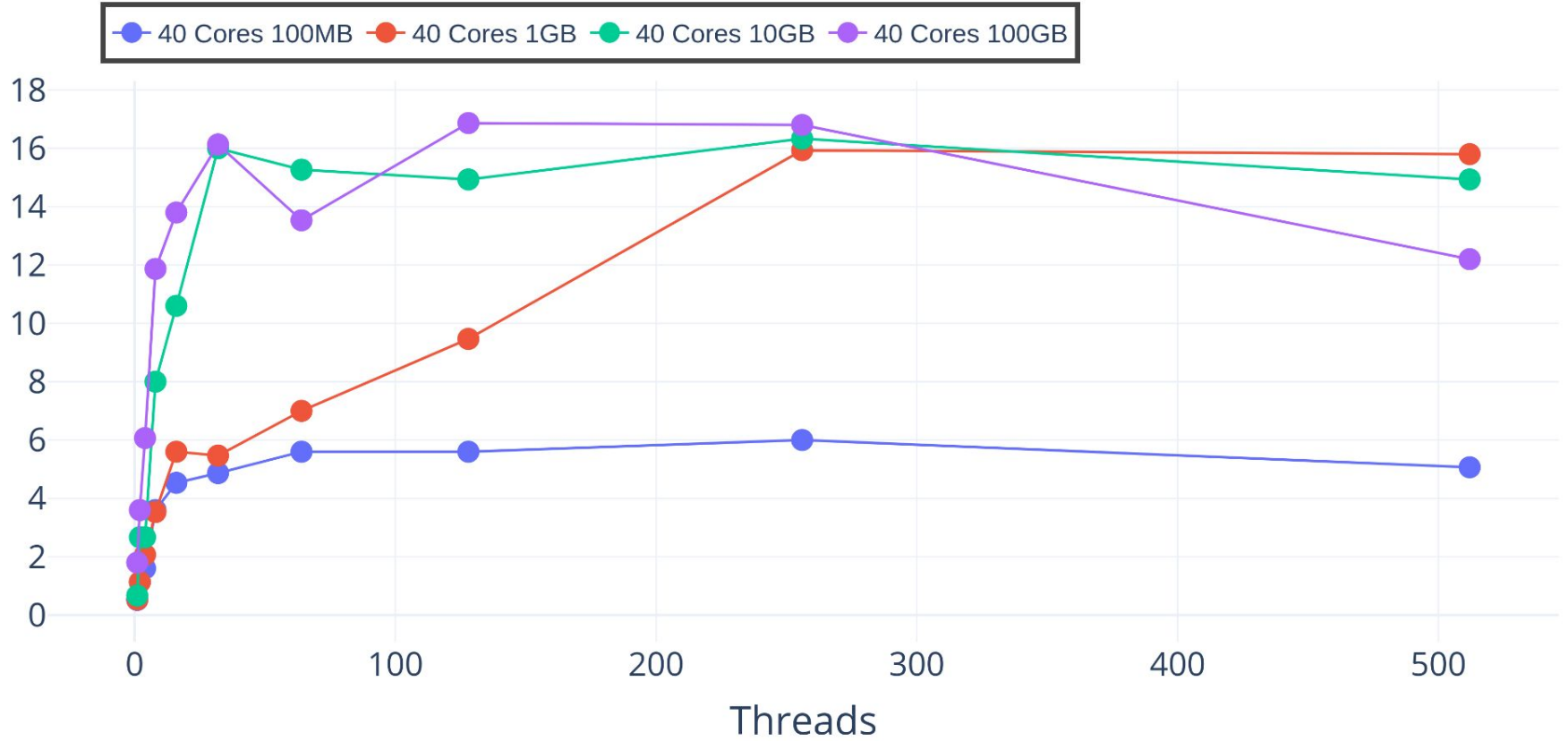
|              | Origin  | Cache   |
|--------------|---|---|
| San Diego    | 0.088/0.109/0.186/0.038 ms<br>0 km              | 0.066/0.178/0.339/0.092 ms<br>0 km              |
| Chicago      | 47.331/47.350/47.391/0.023<br>ms<br>2,784.10 km | 47.337/47.353/47.394/0.021<br>ms<br>2,784.10 km |
| Jacksonville | 51.324/56.352/57.381/0.023<br>ms<br>3,359.86 km | 51.325/56.354/57.383/0.023<br>ms<br>3,359.86 km |

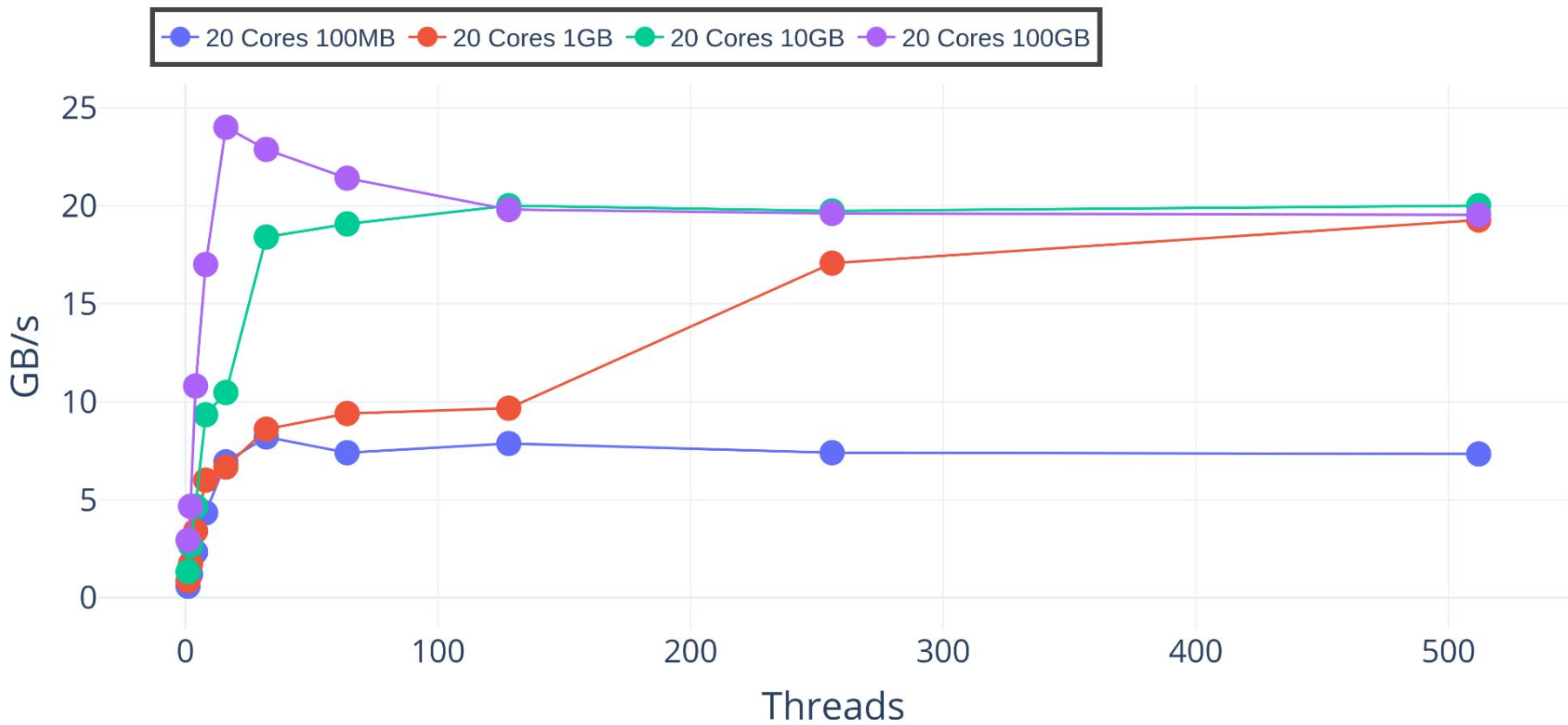














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