

IBM Aspera High-Speed Transfer Server Performance Matrix for Kubernetes

Maximum aggregate throughput was identified with ascp transfer logs, using the *effective_rate* that was reported.

Tests were conducted on a Kubernetes cluster with the following specifications:

- Worker nodes 16x CPU and 64G RAM (CPU = Intel(R) Xeon(R) CPU E5-2650 v4 @ 2.20GHz)
- Master nodes 8x CPU and 64G RAM
- All transfers were conducted with ascp; none with the Node API (to avoid noise).

Baseline Single-File Transfer (Inbound)

For these transfers, the helm chart was deployed using the default values for all resource limits.

File Sizes	Maximum Aggregate Throughput Achieved
100K 100 KB Files	2.9 Mbps*
200 GB	402.64 Mbps
50 GB mix of files	338.7 Mbps

*NOTE: For small files the metric of files-per-second is the most significant, and tests averaged about 14K files per 60 seconds.

10GB Transfer (Inbound) Versus Receiver Pod CPU Limits

For these transfers the helm chart was deployed using all the default values for resource limits, except for the CPU limit, which was scaled up for receiver pods.

Receiver Pod CPU Limit	Throughput Achieved
0.5 (Default)	411.64 Mbps
1.0	588.63 Mbps

1.5	647.13 Mbps
2.0	737.25 Mbps
2.5	786.34 Mbps
3.0	862.90 Mbps

Concurrent Transfers (Inbound)

For these transfers the helm chart was deployed using all the default values, except that ascp swarm was doubled to allow 10 transfers (1 ascp swarm = 6 ascp pods).

Ten transfers were started simultaneously.

Number of Concurrent Transfers	File Sizes	Ascp Swarm Count	Maximum Aggregate Throughput Achieved
10	100K 100KB Files per ascp (1 Million files total)	minAvailable: 2	0: 1.37 Mbps 1: 1.36 Mbps 2: 1.35 Mbps 3: 1.46Mbps 4: 1.50 Mbps 5: 1.53 Mbps 6: 1.49 Mbps 7: 1.52 Mbps 8: 1.33 Mbps 9: 1.34 Mbps Total: 14.25 Mbps ~66 k files per minute

10	10 GB per ascp(100 GB total)	minAvailable: 2	0: 99.77 Mbps 1: 99.38 Mbps 2: 99.71 Mbps 3: 99.57 Mbps 4: 99.29 Mbps 5: 99.60 Mbps 6: 99.67 Mbps 7: 99.67 Mbps 8: 98.70 Mbps 9: 99.49 Mbps Total: 994.85 Mbps
10	15 GB folder mix of files per ascp, 1MB - 50MB (150 GB total)	minAvailable: 2	0: 102.77 Mbps 1: 102.81 Mbps 2: 102.63 Mbps 3: 102.87 Mbps 4: 102.69 Mbps 5: 102.71 Mbps 6: 102.72 Mbps 7: 102.60 Mbps 8: 102.75 Mbps 9: 102.70 Mbps Total: 1027.25 Mbps