How High-Speed File Transfer Impacts Your Enterprise Architecture

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IBM Aspera

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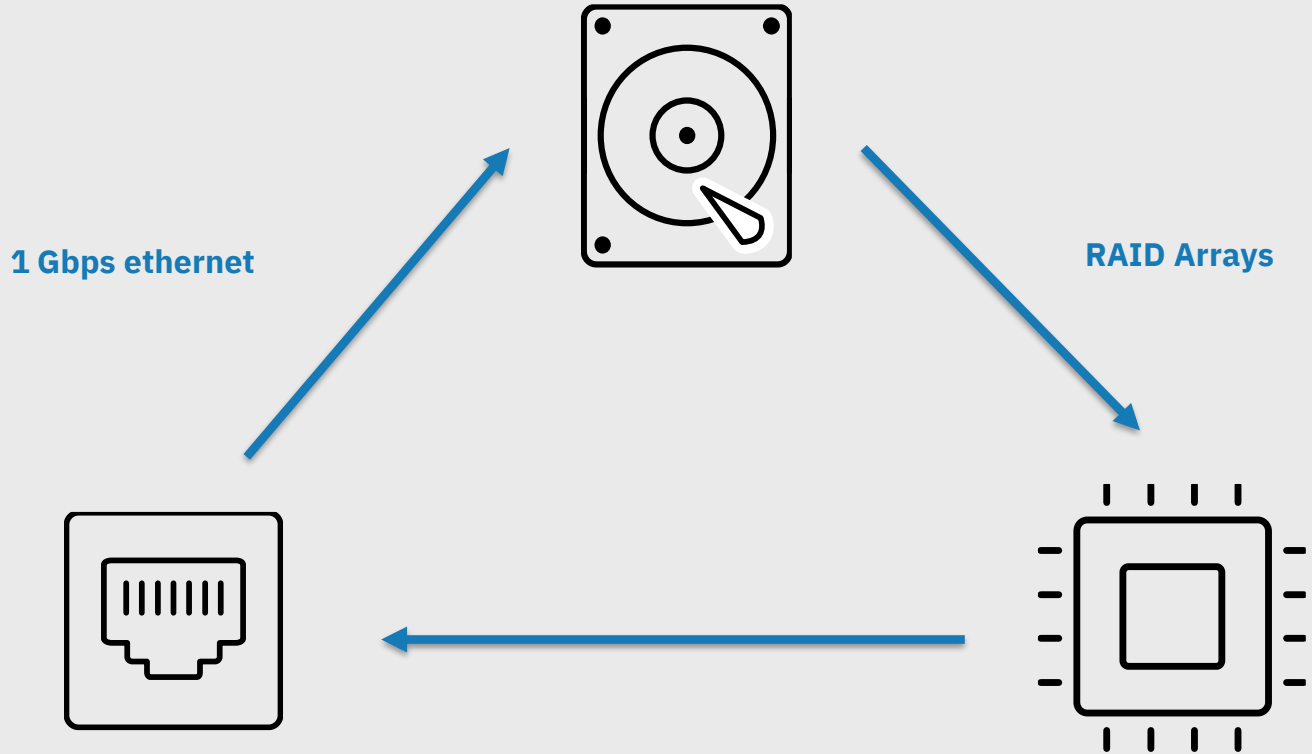
A brief history of performance bottlenecks

History of Bottlenecks
I’m not latent, you are!



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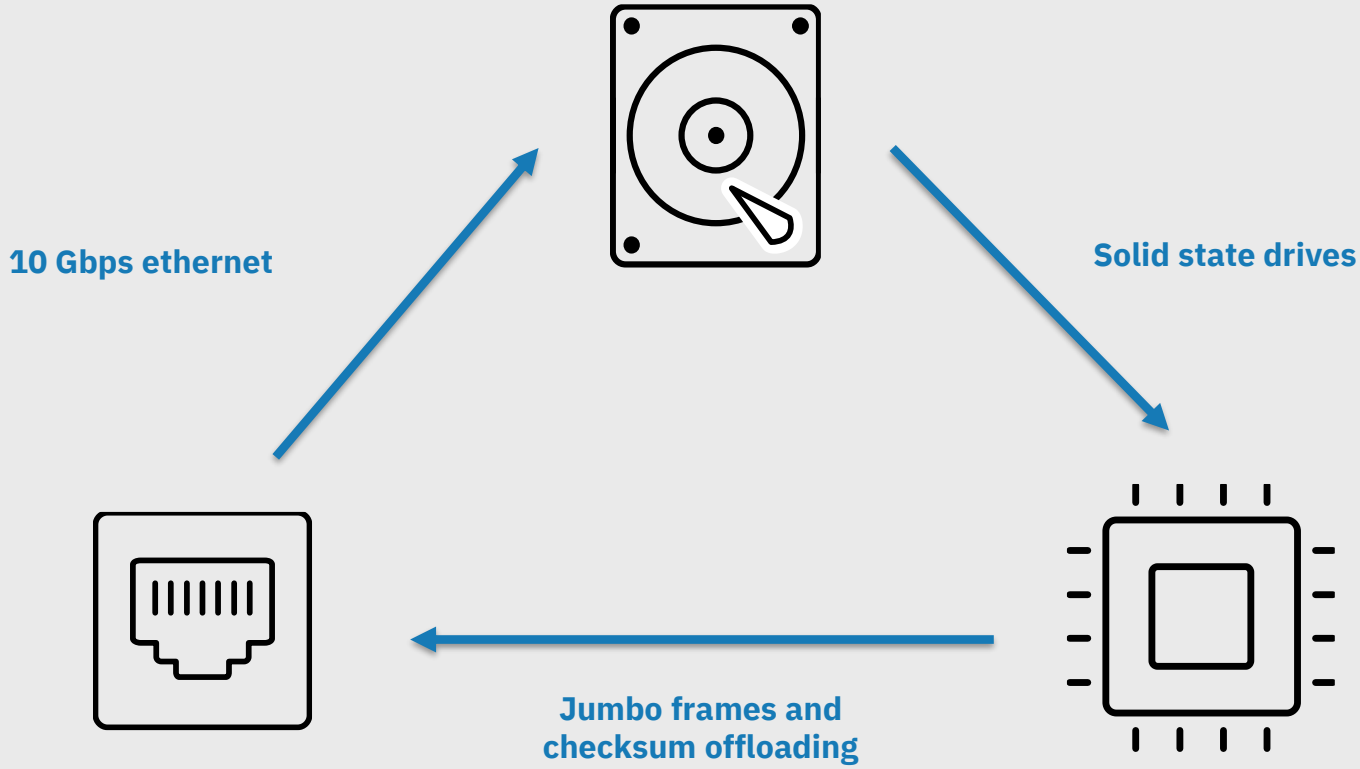

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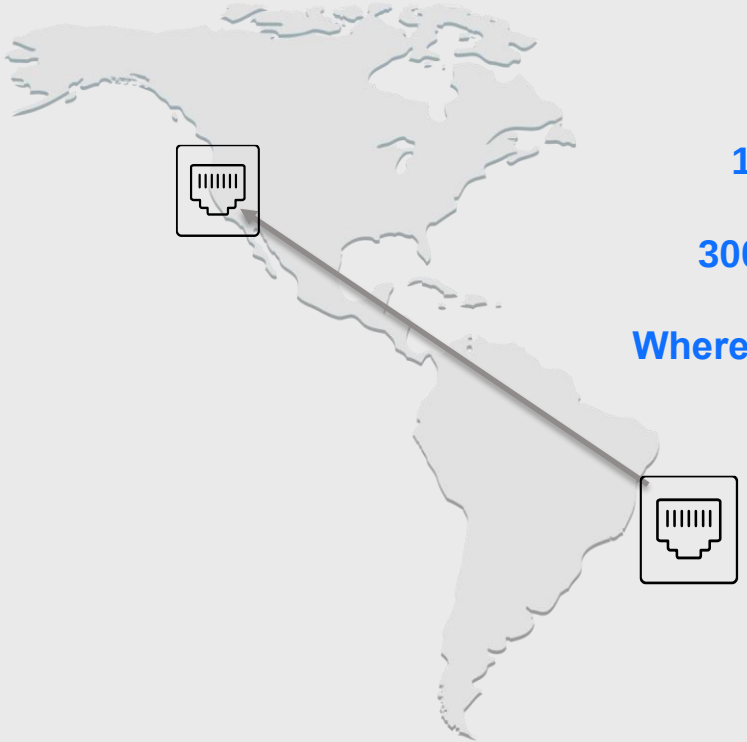
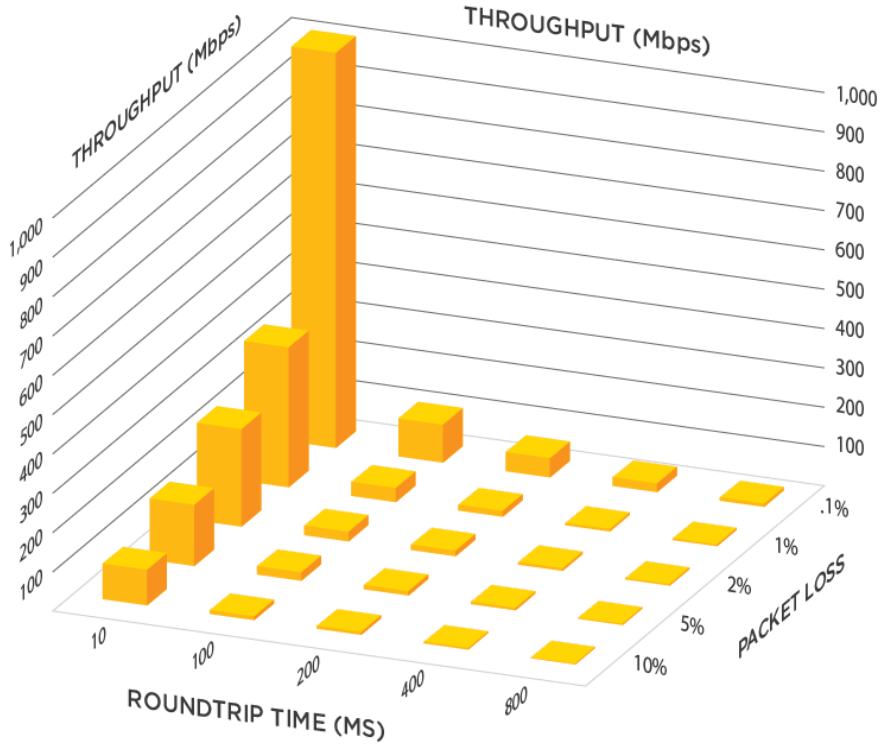


1Gb/s bandwidth

300Mb/s Throughput

Where’s the other 700Mb/s?

History of Bottlenecks
TCP does its part



Distance degrades conditions on all networks

- Latency (or Round Trip Times) increase
- Packet losses increase
- Fast networks just as prone to degradation

TCP performance degrades with distance

- Throughput bottleneck becomes more severe with increased latency and packet loss

TCP does not scale with bandwidth

- TCP designed for low bandwidth
- Adding more bandwidth does not improve throughput

Cloud introduces scale and increased processing, storage capacity, and available bandwidth

History of Bottlenecks
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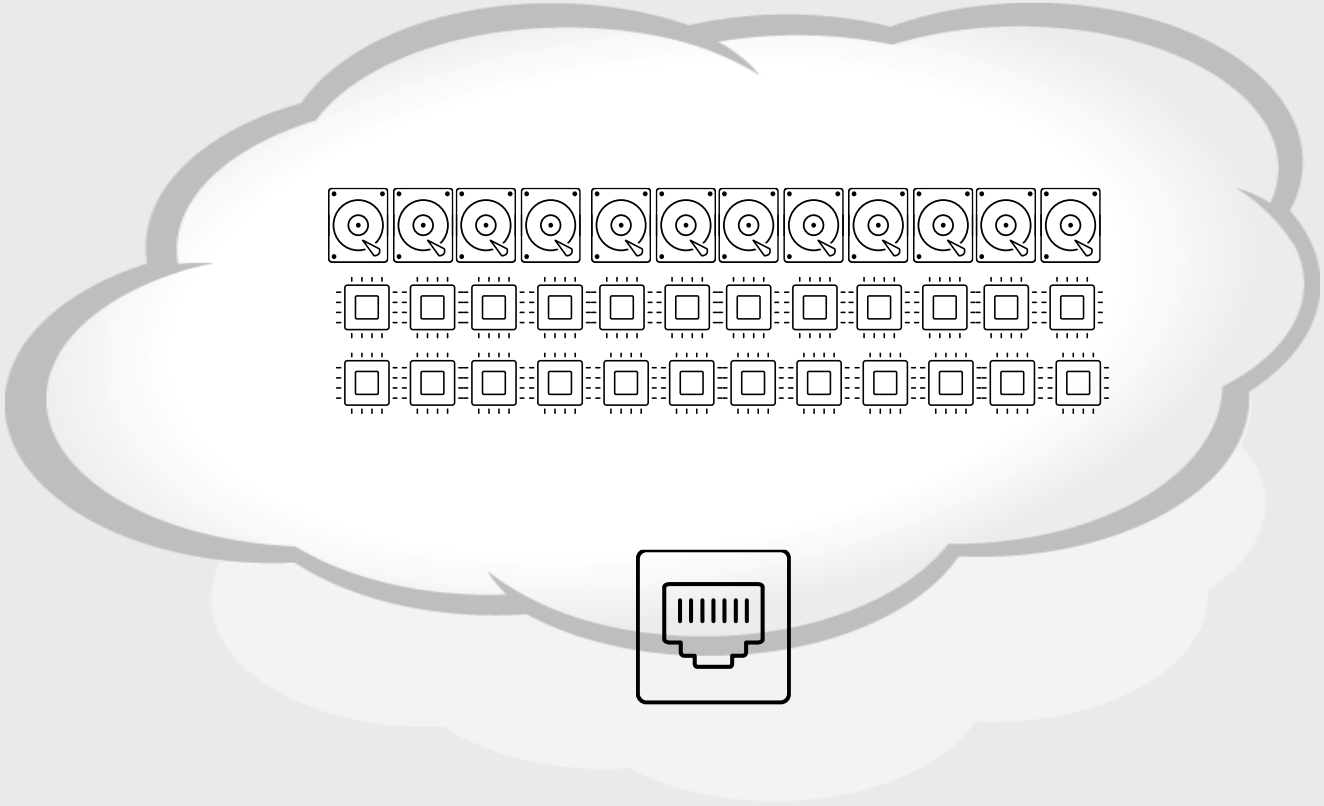

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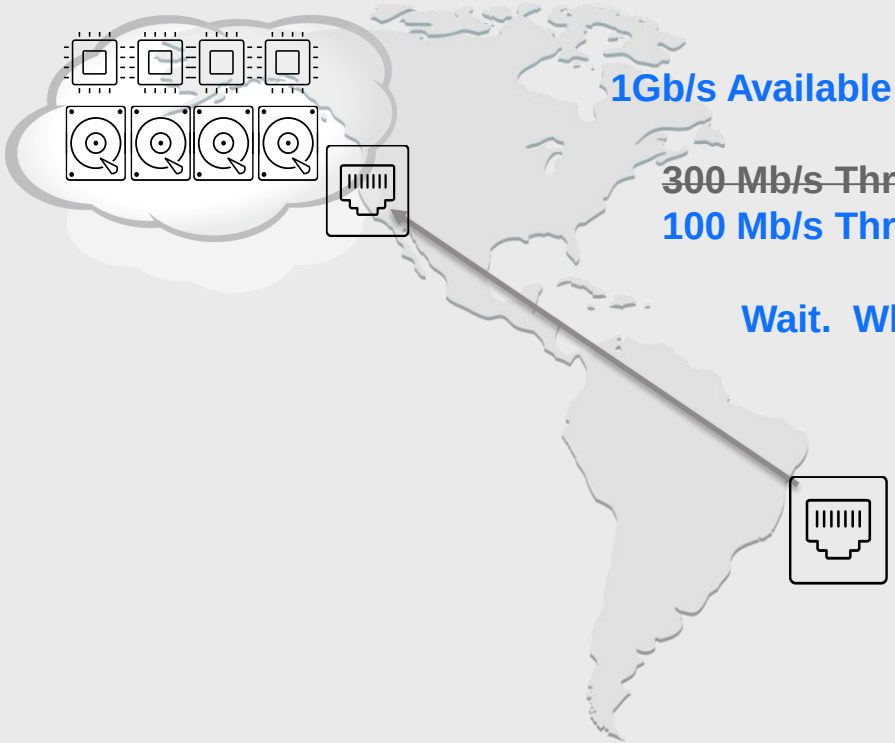
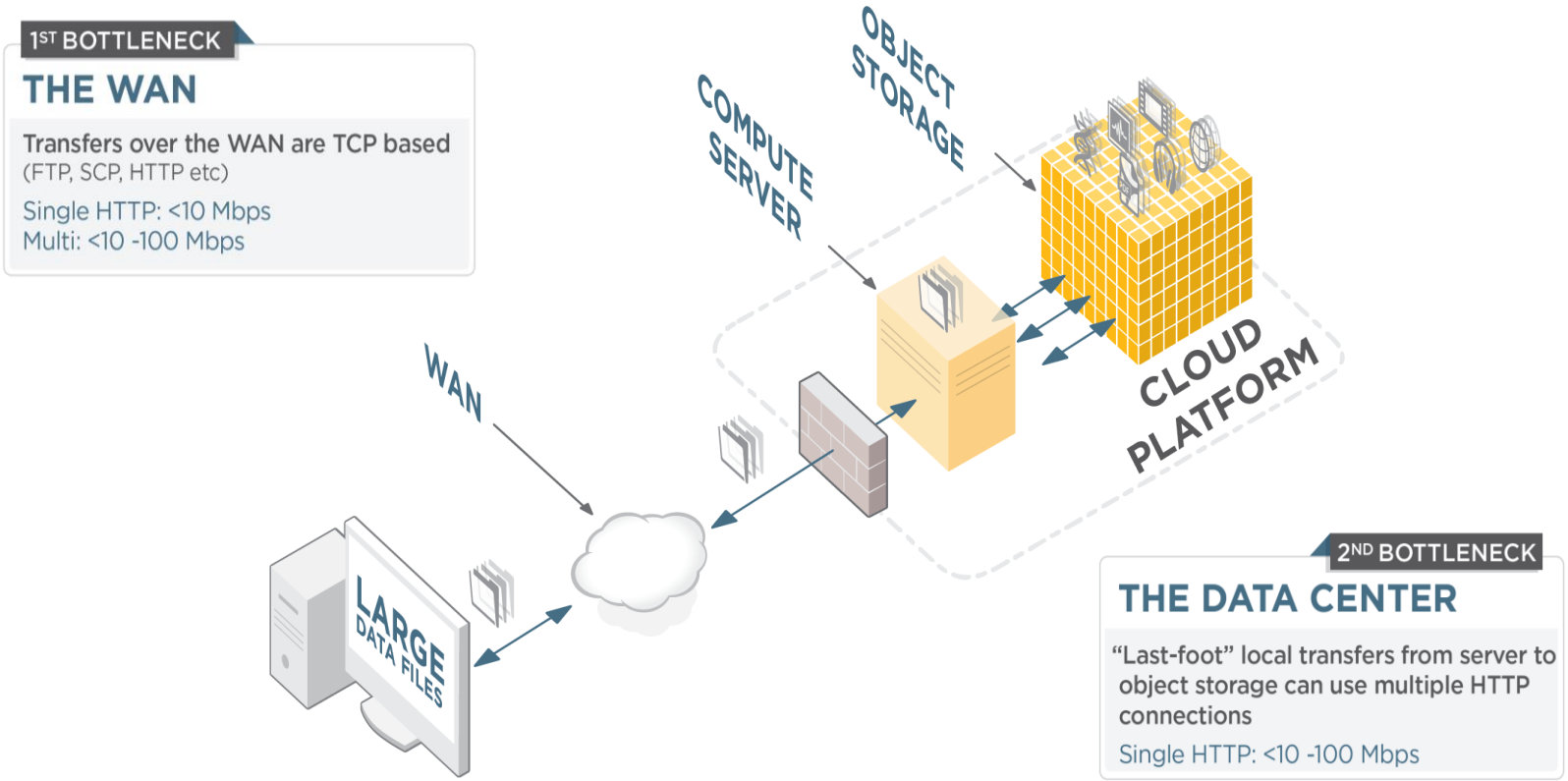


1Gb/s Available Bandwidth

~~**300 Mb/s Throughput**~~
100 Mb/s Throughput

Wait. What?

History of Bottlenecks
HTTP Builds on TCP



History of Bottlenecks
HTTP “optimizations”

HTTP MULTI-PART UPLOAD

OPTION ONE

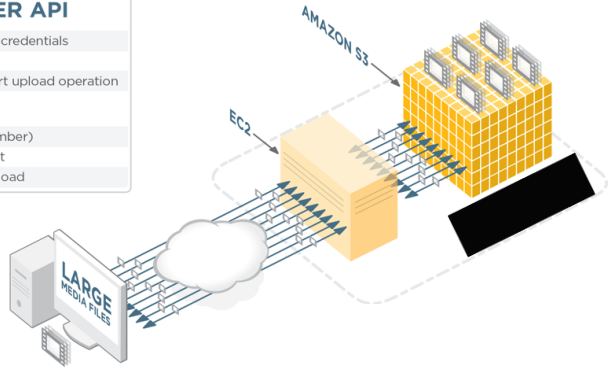
HTTP MULTI-PART UPLOADER API

1. Initiate multipart upload by providing your AWS credentials
2. Provide required bucket name and key name
3. Save the upload ID for each subsequent multipart upload operation
4. Upload parts providing part upload information (upload ID, bucket name, part number)
5. Save the responses (ETag value and the part number)
6. Repeat tasks 4 and 5 for each part of your object
7. Execute a final call to complete the multipart upload

OPTION TWO

TYPICAL TOOLS

CLOUDBERRY EXPLORER | CYBERDUCK | S3FOX ORGANIZER

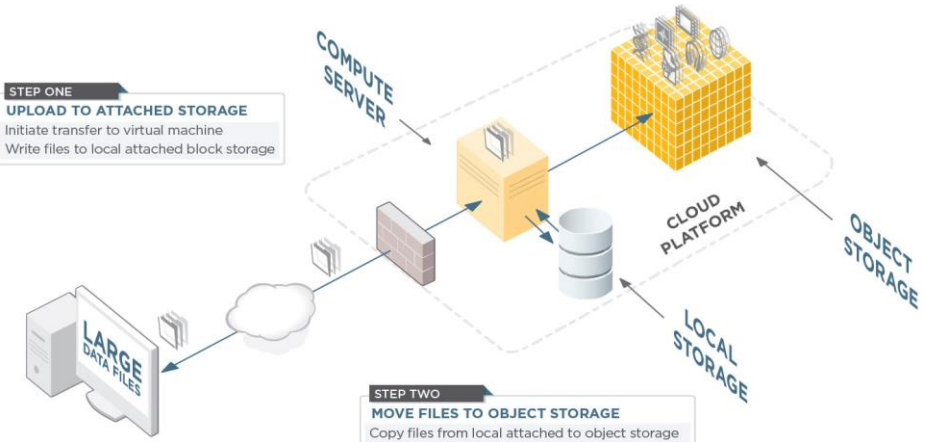


TWO-STEP UPLOAD

STEP ONE

UPLOAD TO ATTACHED STORAGE

Initiate transfer to virtual machine
Write files to local attached block storage



STEP TWO

MOVE FILES TO OBJECT STORAGE

Copy files from local attached to object storage
Delete files from attached storage

Both methods for writing to cloud object storage create bottlenecks and unnecessary delays

High packet-loss and latency shouldn’t slow you

Fasp® – High-performance Data Transport

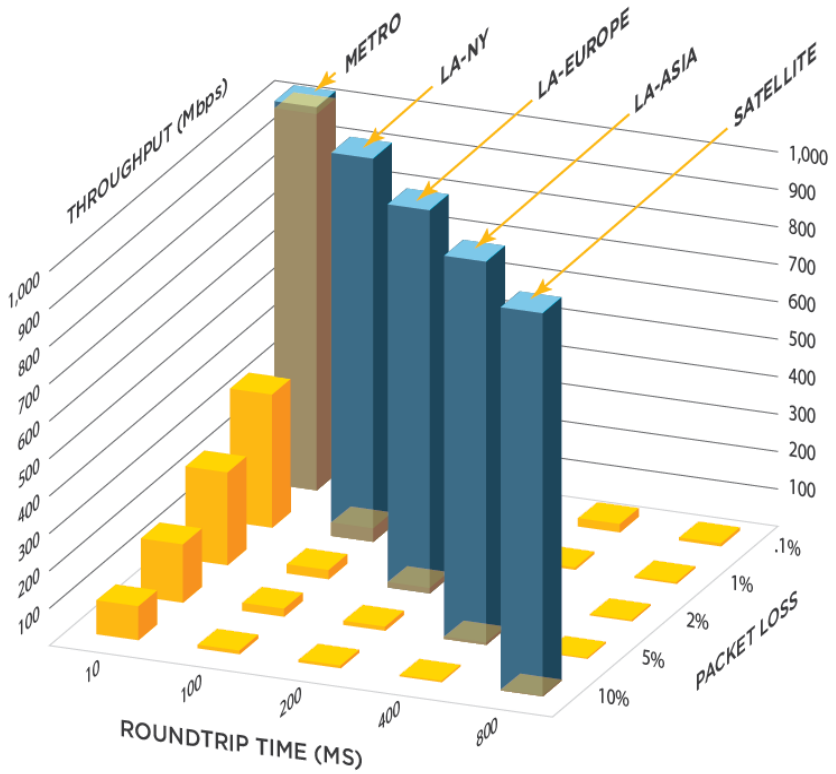
Maximum transfer speed
- Optimal end-to-end throughput efficiency
- Transfer performance scales with bandwidth independent of transfer distance and resilient to packet loss

Congestion avoidance and policy control
- Automatic, full utilization of available bandwidth
- On-the-fly prioritization and bandwidth allocation

Uncompromising security and reliability
- Secure, user/endpoint authentication
- AES-128 cryptography in transit and at-rest

Scalable management, monitoring and control
- Real-time progress, performance and bandwidth utilization
- Detailed transfer history, logging, and manifest

Low overhead
- Less than 0.1% overhead on 30% packet loss
- High performance with large files or large sets of small files

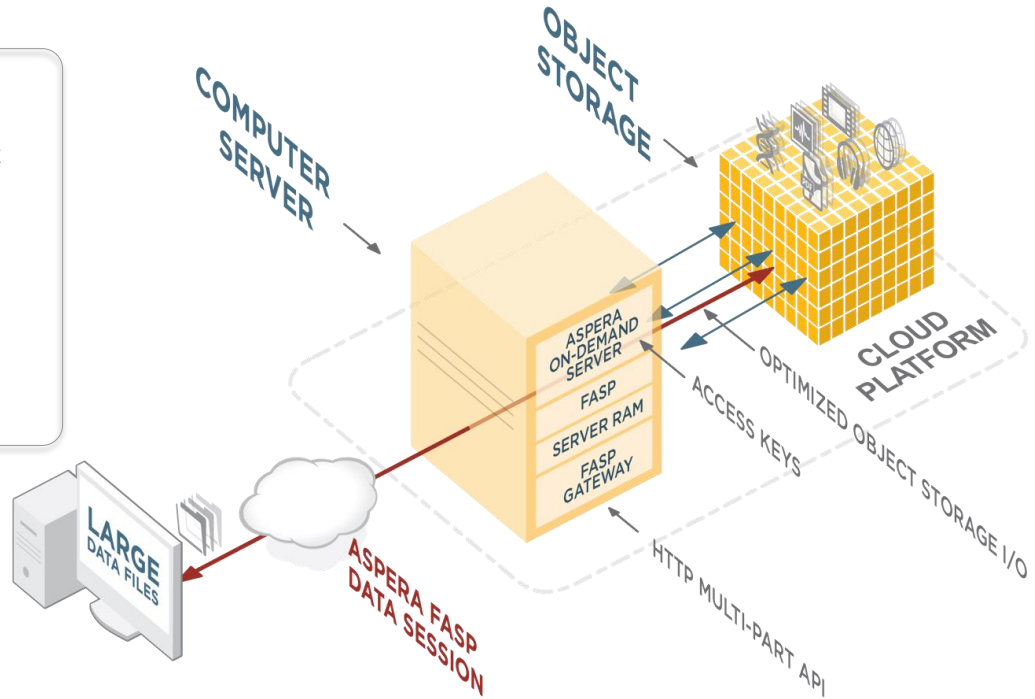


Resulting in
- Transfers up to thousands of times faster than FTP with precise and predictable transfer times
- Extreme scalability (concurrency and throughput)

Direct-to-Cloud

THE SOLUTION

- Full client-side r/w of object storage
- Synchronous transfer from client to object storage
- FASP transfer speeds end-to-end
- Real-time optimization of HTTP threads, chunk
- 2Gbps single instance performance
- Automatic horizontal scaling
- Transfer 100TB per 24 hours per 10Gb/s



IBM Cloud

amazon web services™

Microsoft Azure

Akamai

Google Cloud Platform

AWS GovCloud (US)

NetApp

ceph

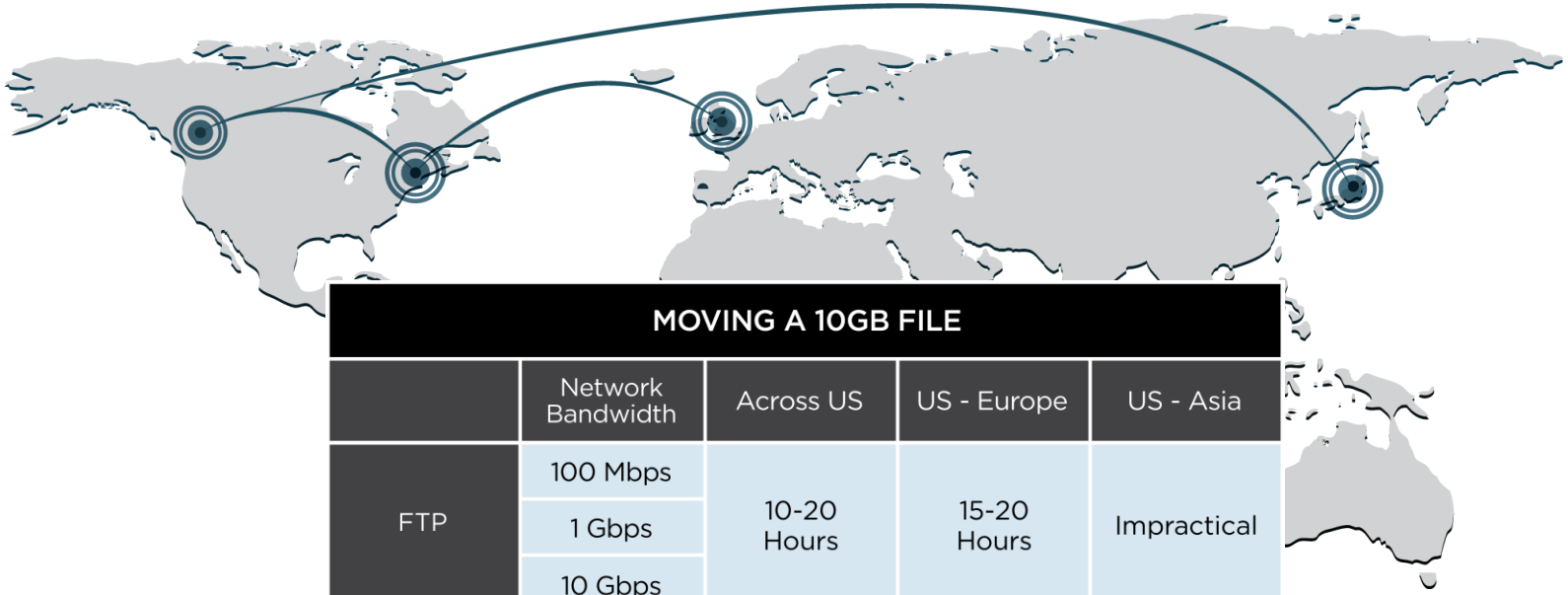
IBM Cloud Object Storage

HDFS

Limelight NETWORKS

Aspera FASP® Performance

Location Agnostic | Predictable & Reliable | Versatile



MOVING A 10GB FILE				
	Network Bandwidth	Across US	US - Europe	US - Asia
FTP	100 Mbps	10-20 Hours	15-20 Hours	Impractical
	1 Gbps			
	10 Gbps			
Aspera FASP®	100 Mbps	14 Min	14 Min	14 Min
	1 Gbps	1.4 Min	1.4 Min	1.4 Min
	10 Gbps	8.4 Sec	8.4 Sec	8.4 Sec

Summary

Performance bottlenecks move around as technology evolves

Higher speed networks have enabled the deployment of enterprise data centers spread around the globe

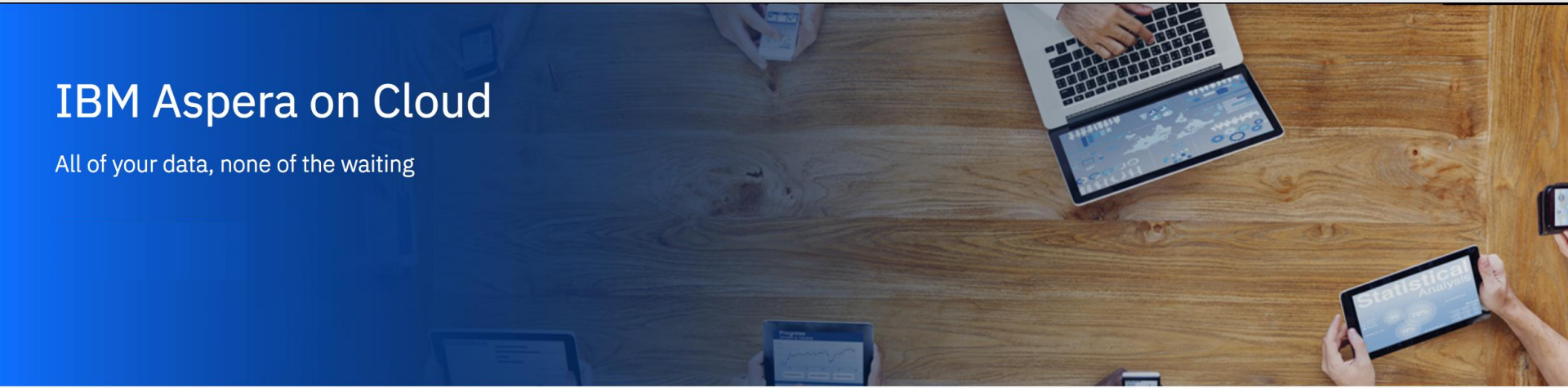
Don’t settle for bottlenecks created by your cloud platform

High-speed file transfer allows you to move the largest workloads to the cloud

High packet-loss networks can still be used for critical workflows

Aspera technology ensures communications can continue from the field over satellite and wireless networks

Try IBM Aspera Today



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