



# Upload files faster with IBM Aspera High-Speed File Transfer for IBM Cloud Object Storage

Even under adverse network conditions, the IBM solution enabled us to transfer files faster than similar services from Amazon and Microsoft

Object storage can be a great way to store data for web and mobile applications as well as unstructured data such as photos, videos, and music. But considering most cloud providers offer some type of object storage, how do you choose between services? One important decision factor is transfer speeds, or how quickly you can move your data into the cloud.

At Principled Technologies, we tested the native file transfer tools associated with three major cloud object storage vendors:

- IBM® Cloud Object Storage with IBM Aspera® High-Speed File Transfer
- Amazon® S3 with Transfer Acceleration
- Microsoft Azure Blob storage with AzCopy

We uploaded a 20GB file and a 50GB file under various network conditions and found that the native transfer acceleration service for IBM Cloud Object Storage offered faster transfer speeds than its competitors. Even under non-ideal network conditions, the IBM service enabled us to upload a large file up to 12 times faster than Amazon S3 and up to 3.3 times faster than Microsoft Azure Blob storage.

## Get faster file transfers to the cloud

### Upload a 20GB file

Up to  
**12x**  
faster

compared to  
Amazon S3

Up to  
**2.5x**  
faster

compared to  
Microsoft Azure



### Upload a 50GB file

Up to  
**10.9x**  
faster

compared to  
Amazon S3

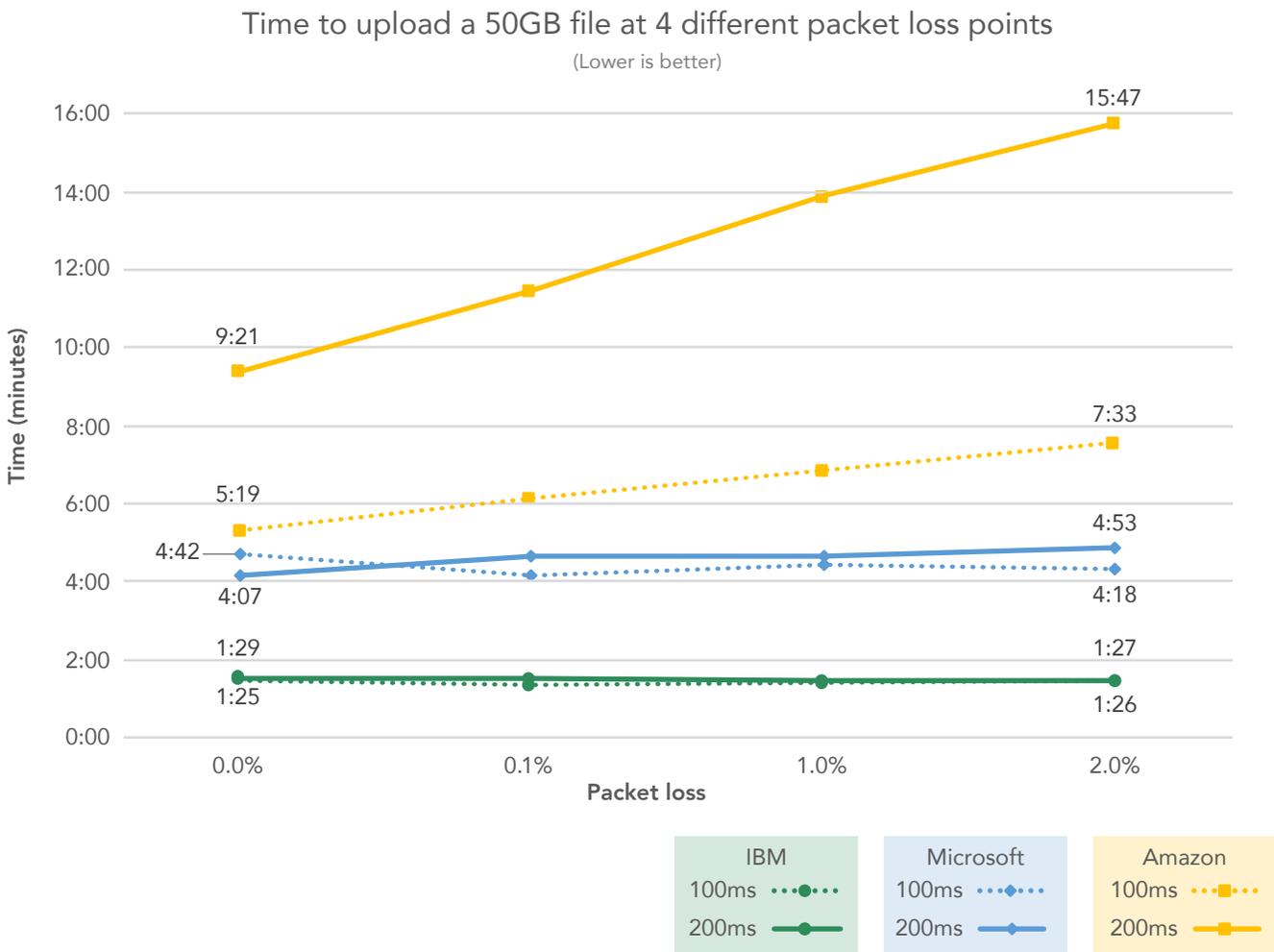
Up to  
**3.3x**  
faster

compared to  
Microsoft Azure

## Results summary

In every single data point across file size, latency, and packet loss, IBM Aspera High-Speed File Transfer delivered faster uploads than either of the transfer acceleration services for Amazon S3 or Microsoft Azure. Transfer times with IBM Cloud Object Storage were the most consistent, especially when compared to Amazon S3. Faster transfer times can mean a better experience for your users, and more consistent upload times are better for strategic planning purposes. For example, a company could more easily plan a large upload if they knew it was going to take roughly the same amount of time as the last one.

Below is our analysis of the data we collected for uploading a 50GB file to each object storage service. For a full account of all our data points down to the millisecond, see the [science behind this report](#).



## Upload your data faster

The speed of your data transfers can set the tone for your users' cloud experience—faster speeds can mean happier users. When controlling for packet loss, IBM Cloud Object Storage enabled us to upload a 50GB file in 1/12 the time of Amazon S3 and roughly 1/3 the time of Microsoft Azure. Even at its longest recorded time, IBM still came out on top: their slowest upload time was just under one and a half minutes. For Microsoft, it was 4 minutes, 53 seconds. For Amazon, it was more than 15 and a half minutes.

## Get consistently fast data transfers

According to their website, IBM Aspera High-Speed File Transfer enables users to transfer large files quickly, regardless of their structure or lack thereof. IBM claims this service provides “predictable, reliable” data delivery, which our data supports.<sup>2</sup>

As the graph on page 2 shows, the transfer times for Amazon S3 Transfer Acceleration varied by just under six and a half minutes when transferring a 50GB file at 200ms latency and degrading packet loss. Microsoft Azure AzCopy performed better, varying by only 46 seconds between the four data points. But IBM Aspera High-Speed File Transfer varied by just three seconds.

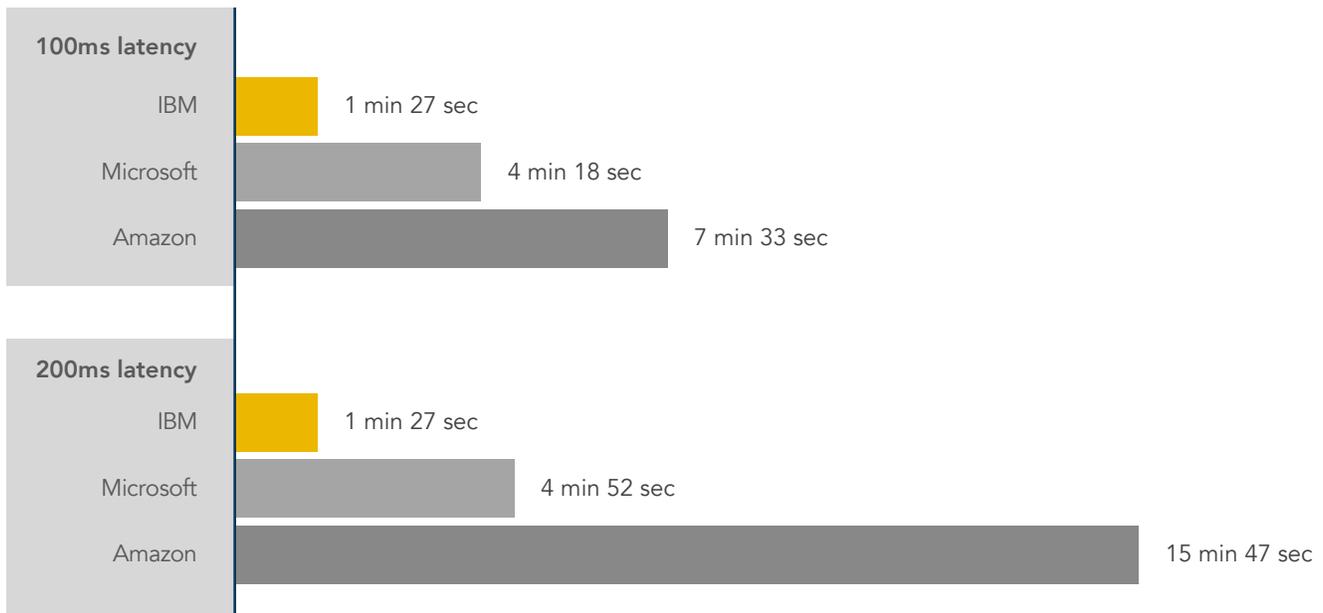
## Speed even under harsh conditions

In our testing, IBM Aspera High-Speed File Transfer, included with IBM Cloud Object Storage, enabled faster file uploads than services from Amazon S3 and Microsoft Azure. But more than that, the IBM service enabled consistently fast uploads even under poor network conditions.

IBM Cloud Object Storage, which comes with IBM Aspera High-Speed File Transfer, boasts speed and consistency.

### Time to transfer 50GB of data at 2% packet loss

(Lower is better)



Amazon S3 with Transfer Acceleration slowed down dramatically with increased latency.

The graphs above illustrate the worst network condition we tested: Uploading a 50GB file at 200ms latency and 2% packet loss. The large file upload took less than a minute and a half with the IBM service, nearly five minutes with Microsoft Azure Blob storage, and more than fifteen minutes with Amazon Transfer Acceleration. These slower times may present as frustrations to users who need to upload large files quickly.

## How we tested

We conducted the testing remotely, accessing an Aspera lab in Emeryville, CA from the Principled Technologies headquarters in Durham, NC. We used the lab's dedicated 10Gb internet connection for all testing and ensured that all traffic traveled through the network to the public internet and on to the target storage so that we did not give any of the cloud providers an advantage. We tested on a 10Gb connection because it helped eliminate bottlenecks on the part of the network we had control over. We performed two sets of tests on separate days. Factors such as time of day and traffic path can affect network conditions beyond our control, so a user's experience with each of the services we tested may vary.

Using each cloud provider's object storage as the target, we uploaded a 20GB and a 50GB file under various latency and packet loss conditions. This report highlights some of our results using a 50GB file; for a more in-depth look at our testing methodology, see the [science behind this report](#). We tested adverse network conditions to show how each object storage service performed under the less-than-ideal conditions that many users experience in reality. To simulate the latency and packet loss conditions we wished to test, we routed network traffic through a Netropy 10G2 WAN emulator appliance and then out to the internet.

To determine the baseline latency across a standard internet connection for each provider, we measured the round-trip latency between the lab and the destination object storage under normal networking conditions at the lab. We then conducted testing, transferring the files to each provider while using the Netropy appliance to add the necessary latency to reach the target 100ms and 200ms latencies. We also used the Netropy appliance to add packet loss at 0.0, 0.1, 1.0, and 2.0 percent.



### About IBM Cloud Object Storage

According to the company's website, IBM Cloud Object Storage is "designed to support exponential data growth and cloud-native workloads."<sup>1</sup> They tout storage class tiers for data of varying temperatures, a low-cost archival service for data you must store but don't expect to access, fast data transfers, and more. To learn more about IBM Cloud Object Storage, visit <https://www.ibm.com/cloud/object-storage>.

## Conclusion

Upload times are an important factor to consider when seeking a new object storage solution for your business. In our tests, uploading large files to IBM Cloud Object Storage using its native IBM Aspera High-Speed File Transfer tool took significantly less time than uploading to Amazon S3 with Transfer Acceleration and to Microsoft Azure Blob storage with AzCopy. The IBM service's upload times also remained consistent across a range of packet loss percentages and latencies, while times for Amazon S3 in particular degraded quickly, varying by more than eight minutes. These differences suggest faster, more reliable transfer acceleration with IBM Cloud Object Storage—but because every network is different, your own experience may vary. Note that IBM offers a free SDK with supporting documentation to help your developers to integrate IBM Aspera High-Speed File Transfer with your existing technologies. According to IBM, the IBM Aspera High-Speed File Transfer SDK enables your team to “initiate high-speed transfer within your custom applications when using either Java or Python.” To learn more about the SDK, visit <https://cloud.ibm.com/docs/services/cloud-object-storage?topic=cloud-object-storage-aspera>. To build applications and test the native Aspera service, users must follow the public cloud documentation IBM provides.

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- 1 “IBM Cloud Object Storage,” accessed May 10, 2019, <https://www.ibm.com/cloud/object-storage>.
  - 2 “IBM Aspera High-Speed Transfer Server,” accessed May 10, 2019, <https://www.ibm.com/us-en/marketplace/aspera-high-speed-transfer-server>.

Read the science behind this report at <http://facts.pt/dtvzvo8> ►



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