File Fabric M-Stream® File Acceleration

TECHNICAL DATA SHEET

M-Stream® Overview

M-Stream is a feature of the File Fabric that is able to provide accelerated File Transfers for a selection of storage providers that have been certified as working with the M-Stream feature.

M-Stream is an abbreviation of 'multiple streams' and is so named as it speeds up data transfers by sending multiple parallel streams of data.

M-Stream unlocks the potential in existing distributed file systems, Network Attached Storage (NAS) and S3 & Swift API compatible object storage systems.

The Copy Throughput Dilemma

Copying files between storage providers has two inherent problems.

First is the data flows through the device that initiated the copy, creating a bottleneck and tying up the client device. Below is an example of a typical transfer from a NAS Filer to an S3 Compatible Object Store.

The second problem is copy operations start at the beginning of a file and proceeds sequentially to the end of the file. This approach limits the transfer speed for large files. Modern storage systems contain hundreds of spindles each capable of 50MB/s of throughput. Reading files sequentially limits the client to working with a single drive at a time, even if the file is chunked across numerous drives.

M-Stream® Acceleration

- Separates a file into Multiple Streams to facilitate transfer acceleration.
- A non-proprietary file transfer acceleration solution.
- No lock-in !
- M-Stream is a module of the Enterprise File Fabric
- Works with certified storage providers - Amazon S3, S3 Compatible, Azure, OpenStack, NAS / SAN.
- Unlike with other file transfer solutions, resultant files uploaded or transferred using M-stream are not encoded in any way.

SME

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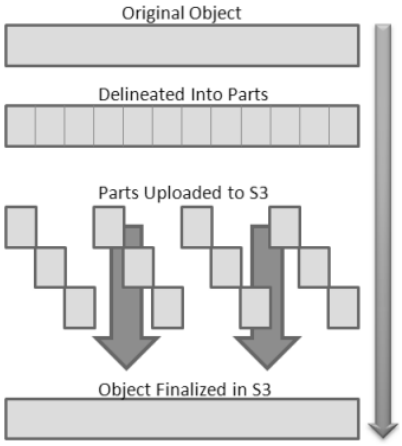
Accelerating Data Transfers using M-Stream®

M-Stream breaks files into chunks and transfers these chunks in parallel. This parallel transfer is enabled in both uploading and downloading of file/object data.



M-Stream File Transfer Acceleration is supported for storage providers that support multipart uploading and range reads (S3 and OpenStack Swift APIs) as well as file systems that support random I/O such as block-storage providers like CIFS and NFS.

To accelerate uploads M-Stream takes advantage of a storage providers multi-part upload. Multi-part uploading (MPU) refers to the ability to create a single large file or object on a server by uploading it in separate segments. Multipart uploading is supported by many object storage platforms and is preferred, and even required, when creating objects over a certain size.

To accelerate the download a 'sparse file' is created on the local operating system and, similar to upload, multiple threads are used to to download elements of a large file in parallel. A sparse is an empty file that resides on a supported operating system (Widows, Mac or Linux) which can be simultaneously written to in blocks.

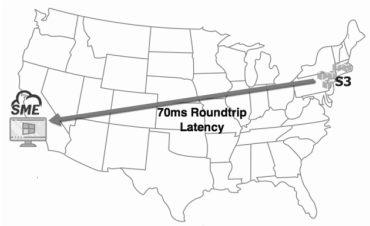
The minimum file size and number of threads used for M-Stream are configurable. The number of segments may be determined based on the total size of the file and the specific target provider.

Standards Based

- Standard TCP is used for file transfers
- Enables a standard web browser to be used with no plug-in's
- Will transparently use QUIC when that standard is ratified

Effective Over High Latency Networks

- M-Stream also works over high latency Internet connections to S3-compatible clouds enabling high speed transfers of data cross-country or cross-continent.
- This is as simple as dragging and dropping a file between two storage solutions from a web browser and closing the laptop. All transfer operations are then conducted by the File Fabric server using M-Stream.



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