

# Move Gigabytes across the Internet in record time - Quickly & Painlessly

**Flume™** is a family of patented networked applications which accelerate file transfers across global networks. Traditional TCP/IP works well on local networks but slows down as distances (and therefore latencies) increase. **Flume** works by virtually eliminating the effects of latency that limit traditional IP transfer technologies. By using **Flume**, a company can now move Gigabytes of data across the internet faster and easier than ever before.

## FLUME PROVIDES:

- A software only solution
- 5-100x acceleration on high latency connections
- Throughput scales linearly with the addition of bandwidth
- Better data reliability than FTP. Flume is more suitable for large transfers than traditional solutions
- 100% automatic operation. Flume continuously dynamically self tunes its operation to include being 'fair' in its bandwidth use for competing network users.

## Real World Flume results for a 100 megabyte transfer:

Link	Bandwidth	Standard FTP		Flume Transport		Speed Up Factor
		Transfer Time (seconds)	Effective Throughput (KB/Sec)	Transfer Time (seconds)	Effective Throughput (KB/Sec)	
NYC - India	E1	2820	35	540	185	<b>5x</b>
NYC -India	4 x E1	2760	36	105	950	<b>26x</b>
China - Netherlands	OC-48	780	128	7	14286	<b>111x</b>

## Technical summary

Flume is a completely automatic software solution that maximizes throughput by minimizing latency. It reacts to past and predicts future network congestion in order to maximize use of available bandwidth while remaining "fair" to competitive traffic as demanded by network managers. It achieves its increased throughput without modifying the data in any way or depending on previous transmissions to serve as foundations for incremental processing.

Why are traditional internet communications so poor over long haul networks? **Network throughput using the standard TCP protocol is severely limited by several factors:**

### LATENCY

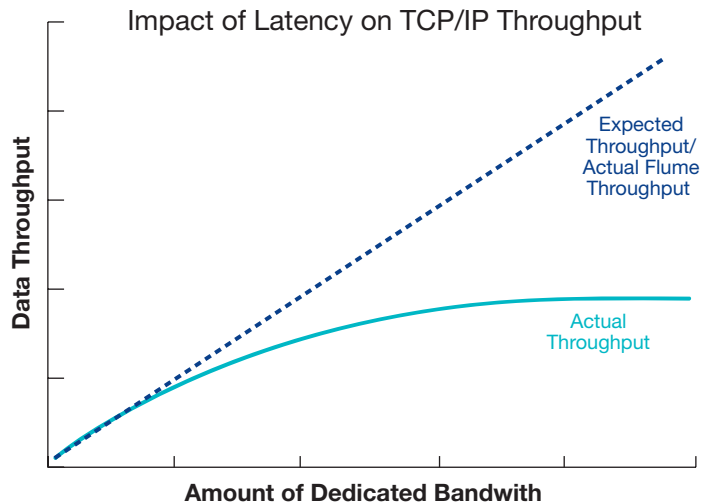
More than half the total overall transmission time for a large file can consist of waiting for data packets to be transmitted to the receiver and acknowledgements of successful receipt to be returned. Due to this latency, increasing transmission bandwidth rapidly reaches a point of diminishing returns (see chart).

### NETWORK CONGESTION

Most file transmissions today compete for available network capacity with many other users. TCP adapts very poorly to changing traffic volumes.

### NETWORK QUALITY

Lost or distorted data results in partial retransmission and magnified latency at best and total transmission aborts at worst.



## Frequently Asked Questions

**What is Flume's architecture? What network investment do I need to make to use Flume?**

**FLUME** is a server-client software solution. Flume does not require any special network hardware. **FLUME** runs on standard Linux machines, with one machine required on each end of a desired connection.

**What speeds can Flume achieve on my network?**

**FLUME** has continually been proven to leverage all available bandwidth - while being respectful to concurrent network traffic. **FLUME** will moderate its sending rate to ensure all other network traffic is transmitted unencumbered by Flume's activities.

**What application functionality does Flume offer?**

**FLUME** is currently packaged as a multfile directory synchronization tool. Flume is also available for integration, via API, into other enterprise applications.

### Case study - US Financial Services Company

A large US Financial services company with operations in New York City and Hyderabad, India was unable to replicate all operation data between the two locations despite having a dedicated T1 line between the two sites. Despite an approximate available bandwidth of 250 KB per second, the company was only able to attain a 35KB/s rate of throughput, due to long haul latency. Installing Flume on the link allowed the customer to increase their throughput to 170-200KB/second with the data throughput rate dependent upon concurrent network traffic. Interested in conducting full nightly replication between the two sites, the customer leased 3 more T1 lines between their operations and leveraged Flume on the expanded link. As predicted, Flume scaled linearly with the added bandwidth giving 930-970KB/s of throughput of the available 1MB/s of bandwidth all the while allowing completely uninterrupted regular IP communications between the sites.



### Saratoga Data Systems, Inc.

Saratoga is a software company dedicated to solving the problems caused by huge data volumes. The founders all have extensive software development experience applying limited computer resources in the design and manufacturing of data processing applications and the design of state-of-the-art computer integrated circuits.