Download Benchmark Whitepaper

Transfer Time Benchmarks for Common File
Downloads over Various Link Speeds
With and Without FastSoft E Series Acceleration

May 2008

fastsoft®

White Paper

Companies that depend on the transfer of large files—like video and design files—lose valuable time and productivity waiting for data to download. FastSoft's E Series is decreasing the file transfer wait time up to 30x with a one-sided acceleration product that does not require any hardware or software on the receiving end.

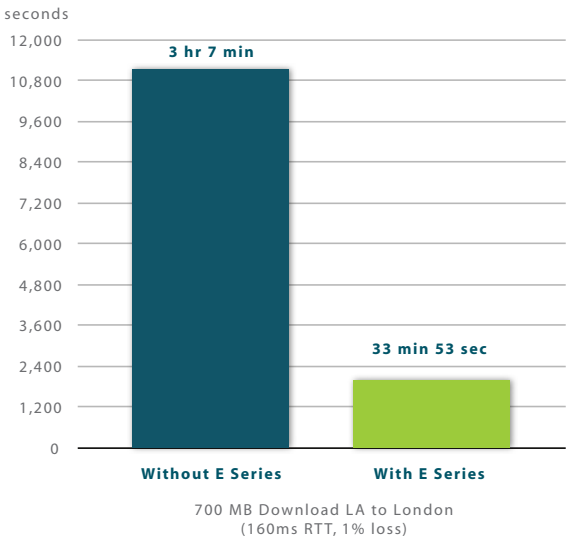
High Speed Networks Don't Deliver

A typical two-hour movie uses approximately 700MB of disk space and can take between 1½ and 4 hours to transfer from Los Angeles to New York on a typical DSL/Cable Modem line (3Mbps) using the standard TCP protocol. Many companies try to shorten this transfer time by purchasing expensive high-bandwidth data lines. After all, the same 700MB file should take less than 10 minutes to transfer at Metro Ethernet (10Mbps) speeds.

However, this is not the case: benchmark testing shows that a 700MB file can take between 67 minutes and 7½ hours to transfer across the US on a Metro Ethernet connection, depending on Internet congestion. Clearly the theory is not translating into practice. That's because the TCP protocol that governs 90 percent of Internet traffic is inherently flawed.

This poor performance is due to the fact that the TCP protocol itself is inefficient when dealing with packet loss, long distances or high-speed networks. The congestion control mechanism of the standard TCP protocol was created years ago at a time when networks were far slower, smaller, and less heterogeneous. FastSoft has created a unique solution which addresses these limitations.

Our E Series of Internet acceleration appliances offers extremely robust performance across a wide range of operating conditions. Using our product, a 700MB video file can be transmitted coast-to-coast in less than 40 minutes on a DSL/Cable modem and in less than 15 minutes on a Metro Ethernet connection. In addition, it can be transferred worldwide up to 30x faster when E Series is added to the sender's network. Most importantly, the E Series is clientless, meaning that it can achieve significant performance gains without any additional hardware or software at the receiving end.



700 MB Download LA to London
(160ms RTT, 1% loss)

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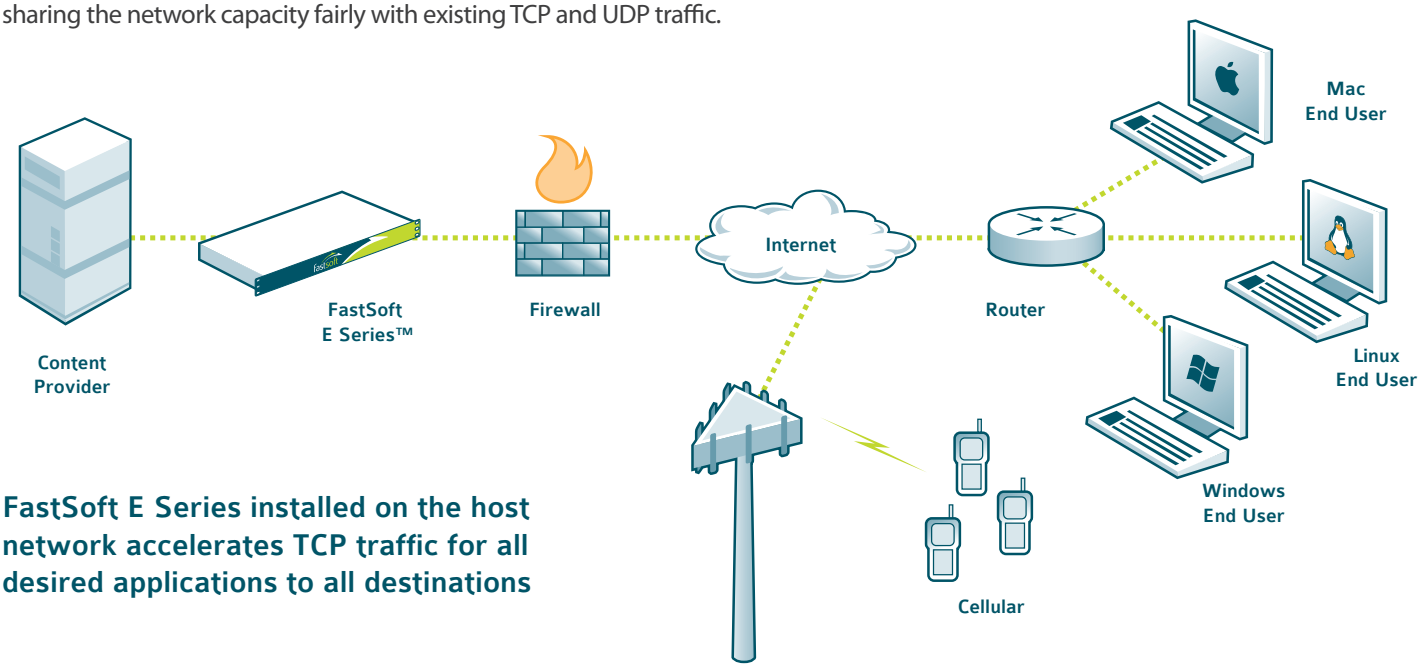
Network Simplicity

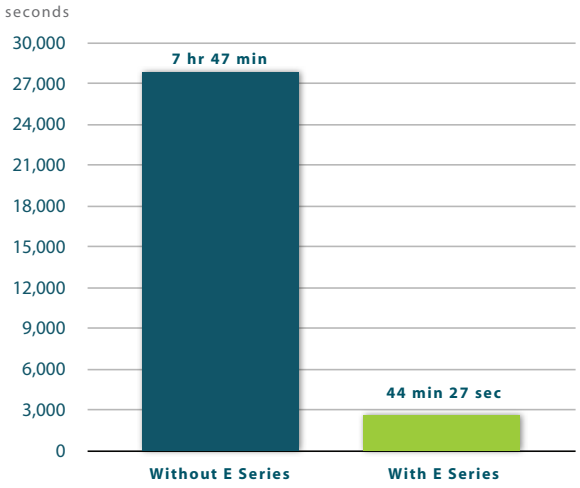
The FastSoft E Series resides at the sender's site only, and does not require a typical two-box (dedicated sending and receiving) configuration. Additionally, it does not require any software modifications to the sender's or receiver's network infrastructure. Once installed, clients receive faster data transmissions automatically, and furthermore, the appliance is designed to make its transmissions interact gracefully with existing data flows, sharing the network capacity fairly with existing TCP and UDP traffic.



FastSoft E Series installed on the host network accelerates TCP traffic for all desired applications to all destinations

Benchmark Configuration

The benchmark results are drawn from tests both in our customers' production networks and in our laboratory. For lab tests, the test bed consists of two servers connected through a WAN emulator to two client computers. All machines are either Windows 2003 Servers or Linux servers (kernel version 2.6) and run standard TCP. The WAN emulator can be configured with specified speed, latency, and packet loss rate. Both FTP and iPerf (a standard throughput measuring tool) have been used in our tests. The charts above compare results with and without the the FastSoft E Series appliance inserted between the sender and the WAN link.



2.5 GB Download LA to Hong Kong
(260ms RTT, 1% loss)

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Benchmark Data

The results of our end-to-end transfer of common files with and without the FastSoft E Series ™ are as follows:

Source	Destination	Pipe Size (bits per second)	File Size (bytes)	File Type	Transfer Time Before (minutes)	Transfer Time After (minutes)	Transfer Time Improvement
New York	Boston	1Gbps	25GB	Blue Ray Disc	230	12.5	18.4x
New York	San Francisco	1Gbps	4.7GB	DVD Disc	82	5	16.4x
New York	Los Angeles	1Gbps	25GB	Blue Ray Disc	455	22.5	20.2x
New York	London	100Mbps	700MB	CD Disc	14	1	14.0x
Los Angeles	San Francisco	1Gbps	25GB	Blue Ray Disc	10	2	5.0x
Los Angeles	New York	1Gbps	4.7GB	DVD Disc	77	3	25.7x
Los Angeles	Boston	1Gbps	25GB	Blue Ray Disc	360	27.5	13.1x
Los Angeles	London	100Mbps	4.7GB	DVD Disc	128	9	14.2x
Connecticut	San Francisco	100Mbps	100MB	High-Def Video	24	2	11.7x
Connecticut	Los Angeles	100Mbps	100MB	High-Def Video	42	3	15.5x
Connecticut	New York	100Mbps	100MB	High-Def Video	24	3	8.0x
Connecticut	London	100Mbps	100MB	High-Def Video	67	2	27.2x
New York	San Francisco	45Mbps T3	500MB	Graphic Files	25	4	6.2x
New York	Los Angeles	45Mbps T3	500MB	Graphic Files	24	4	5.7x
New York	London	45Mbps T3	500MB	Graphic Files	46	4	10.6x
Los Angeles	New York	10Mbps Cable	200MB	Digital Dailies	8	3	2.5x
Los Angeles	Taipei	3Mbps DSL	200MB	Digital Dailies	89	12	7.7x
Los Angeles	Shanghai	1.5Mbps DSL	200MB	Digital Dailies	267	24	11.0x
Los Angeles	Buenos Aries	1Mbps DSL	200MB	Digital Dailies	133	30	11.0x
Los Angeles	Tokyo	10Mbps Shared Ethernet	200MB	Digital Dailies	35	9	4.0x
Los Angeles	Hong Kong	10Mbps Shared Ethernet	200MB	Digital Dailies	47	10	4.7x
Los Angeles	Singapore	10Mbps Shared Ethernet	200MB	Digital Dailies	47	10	4.7x
Los Angeles	Sydney	10Mbps Shared Ethernet	200MB	Digital Dailies	40	7	5.7x
Los Angeles	Seoul	10Mbps Shared Ethernet	200MB	Digital Dailies	61	7	8.6x

About FastSoft

FastSoft (fastsoft.com) was launched in 2006 to bring the benefits of Internet acceleration technology to the media and entertainment industry and other enterprises that depend on the transfer of large files. FastSoft accelerates video up to 15x for long-distance production collaboration, digital delivery to customers, and superior broadband viewing in the home. Large files - including CAD, imaging, business information, and software – can see an improvement of up to 30x faster. Unlike other acceleration solutions, FastSoft's products are single-box solutions that require no hardware or software on the receiving end. The company's core technology, FastTCP™, is based on research originally developed by FastSoft's founders at the California Institute of Technology's Networking Laboratory (Netlab).

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