

Akamai Large File Download Optimization

Accelerate the Delivery of Large Files for Your Customers

The size of files delivered over the Internet is constantly increasing. This is due to many factors, including fast connectivity into the home, larger and cheaper storage devices, and high definition video. Many companies are now finding it feasible to deliver full DVD images (4-5GB) and greater over the public Internet. As HD-DVD and Blu-Ray formats become popular, it is inevitable to see file sizes grow to 10GB or more. Akamai has anticipated and prepared for this growth through the development of Large File Download Optimization which helps improve the performance of delivery of large files.

Large File Download Optimization is included with Akamai's Electronic Software Delivery (ESD) and Akamai Media Delivery (AMD) solutions as part of HTTP Downloads.

Large File Download Challenges

A large file is any file greater than 100 Megabytes in size. The Large File Download Optimization feature focuses on optimizing the download performance for files that are greater than 100MB up to multiple Gigabytes.

There are a number of challenges inherent in delivering large files.

First, the average time to download a large file can be significant. This is due to the bandwidth required to deliver them and the fact that the downloading of large files is more prone to errors which can result in the download failing before fully completing and, in some cases, restarting

Second, many large files, like digital movies, are rarely watched in their entirety. However, many content delivery providers require the entire file to be cached before downloading it and as a result the download cannot be delivered before it has been fully cached. This has a direct impact on the performance of a download.

To combat these challenges, a specialized download client application is often required. Specialized download managers accomplish the following goals:

- Enhances the performance of delivering large files
- Ensures that large files can be downloaded without encountering errors
- Allows an end to user pause a download and resume it at a later time

When downloading files with an end-user download manager, there are often cases where the application may request parts of a file or attempt to download the file in random order resulting in the delay of the download until after the entire file has been retrieved.

When downloading large files, to improve performance, it is also helpful to cache only the percentage of a file that is requested by end users for delivery to the farthest reaches of the Internet. Furthermore, to improve performance when downloading large files, it is helpful to cache only the percentage of a file that is requested by end users.

Large File Download Optimization

Akamai's Large File Download Optimization helps customers improve the delivery of large files. The key technology behind it is a system for retrieving, storing, and delivering large files as a number of small, individual byte-range chunks. The main benefit is that the Akamai edge servers do not have to wait to receive an entire file before delivering it, and only store the percentage of the file that is actually requested by the end user.

Performance of large file delivery is further enhanced by leveraging Akamai's Download Manager which can improve performance by delivering the byte-range chunks directly to it, where they are then re-assembled. This allows the Akamai Download Manager to open several simultaneous connections, and download file chunks in parallel.

There are several use cases where this is important.

Movie Downloads

If an end user requests the download of a 60 minute movie, for example, but only watches the first 10 minutes, Akamai's Large File Download Optimization allows Akamai to only cache the part of the file the user wants to watch and not have to cache the entire movie.

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Benefits To Your Business

Increased File Size Limit

Large files up to multi-Gigabytes in size are treated as a compilation of many small chunks that each chunk can effectively be treated as it's own "file" on the Akamai network. This allows Akamai to efficiently deliver large files in the same way that it delivers small ones.

Improved Download Performance

Large File Download Optimization ensures that the most relevant portions of a file are always in cache on Edge Servers, close to end users. This improves a customer's cache hit rate and directly helps improved download speed.

Improved Origin Offload

When Akamai edge servers retrieve fresh content from a customer's origin infrastructure, only the portion of the file that has been requested by end-users will be retrieved and cached. This minimizes the amount of bandwidth required to transfer content out of a customer's origin data center. Example: A long video file where no user ever watches more than 50% of the content.

Increased Download Completion Rates

Large File Download Optimization helps increase customer's download completion rates by improving the performance and reliability of large file downloads.

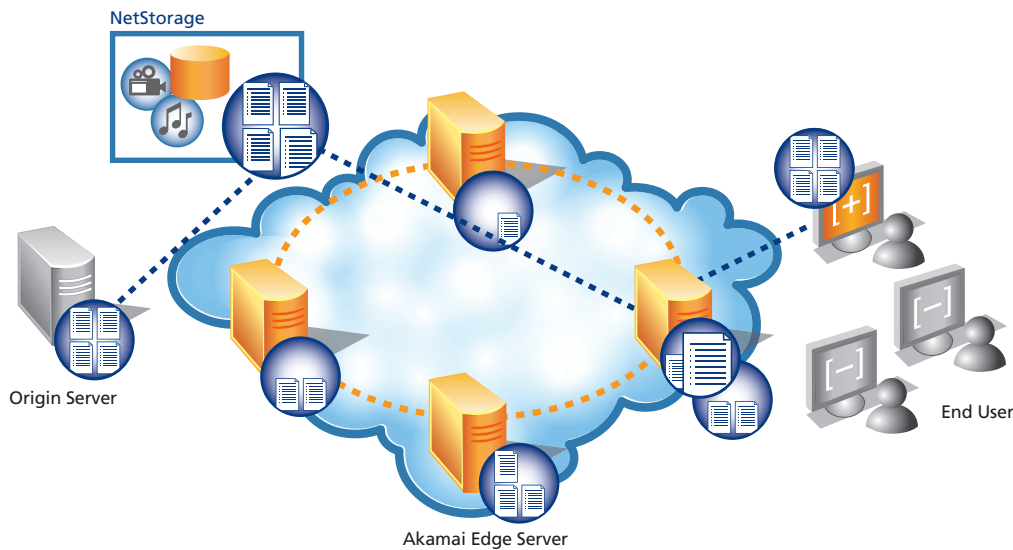
Software Downloads

An end user might start to download a large 5GB software file, then pause halfway through the download, and resume 1/2 hour later. Upon resume, Large File Download Optimization allows the edge server to only request that part of the file that has not yet been downloaded from NetStorage rather than transferring the entire file again. This significantly speeds up the download experience for the end user.

Furthermore Large File Download Optimization allows files to be transferred from the edge server to the end user before the whole file has been received from Akamai's storage infrastructure, NetStorage.

How Akamai Large File Download Optimization Works

The diagram below shows how Akamai's EdgePlatform improves the delivery of large files by retrieving and delivering only the portion of the files requested by the end user.



About Akamai

Akamai® is the leading global service provider for accelerating content and business processes online. Thousands of organizations have formed trusted relationships with Akamai, improving their revenue and reducing costs by maximizing the performance of their online businesses.

Leveraging the Akamai Edge Network, these organizations gain business advantage today, and have the foundation for the emerging Internet solutions of tomorrow. Akamai is "The Trusted Choice for Online Business." For more information, visit www.akamai.com.



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