



# Imperva Incapsula Content Delivery Network

DATASHEET

## Application-Aware CDN

Imperva Incapsula runs on a globally distributed network of data centers that deliver full site acceleration through intelligent caching and content optimization.

Incapsula application aware CDN dynamically profiles website resources and identifies all cacheable content (dynamic and static) - including content that other CDNs cannot cache. Moreover, dynamic profiling and frequency analysis ensures that the most frequently accessed resources are identified, and fetched directly from memory. This speeds-up the content delivery by bypassing the file system, without relying on slower access mechanisms such as buffer-cache.

### Why Incapsula?

- Application-aware traffic analysis technologies, developed for our security services, maximize cacheable content
- Most frequently accessed resources always delivered from memory
- Activated by simple DNS change - no hardware or software installation, integration or changes to the website

### Global Network Distribution:



## What You Get

- Application-aware, global CDN for full site acceleration
- Static and dynamic content caching for maximum website performance
- Sophisticated content and networking optimization to minimize latency

# Intelligent Content Caching

## Static Content Caching

Incapsula caches your static content, such as HTML files, images or JavaScript resources, so that they can be served directly from our globally distributed data centers on demand.

## Dynamic Content Caching

Patent-pending advanced learning algorithms continuously profile website resources, gathering intelligence on each resource. Some of these resources, which may be dynamically generated, rarely change over time and for different users. This intelligence allows for optimized caching and ensures resource accuracy.

## Serving Pages from Memory

Advanced learning and frequency analysis offer the added benefit of identifying the most frequently accessed resources, and serving them directly from physical memory, completely bypassing the file system and other generic mechanisms (such as buffer-cache).

## Client-Side Caching

Incapsula optimizes client-side caching by making sure that as much content as possible is cached on the visitor's browser or mobile device. Client-side caching ensures instant loading of resources and the best possible user experience. Based on the same advanced algorithms used for dynamic caching, Incapsula enriches browser caching instructions while setting the right refresh policy, so content always stays fresh.

## Flexible Caching Policies and Acceleration Settings

Incapsula gives you full control and flexibility with respect to your website's acceleration settings, which can be managed directly from your Incapsula account. You can choose from the following pre-defined caching modes based on the needs of your site and users:

- **Aggressive**

Indiscriminately caches virtually every resource on the web server (appropriate for very static sites).

- **Advanced**

Uses proprietary traffic analysis algorithms developed by our security and performance experts to optimize and enhance the standard caching techniques. This mode maximizes content caching on our servers and, in most web applications, delivers the highest performance levels. (Available for paid plans only).

- **Disable Caching**

Incapsula will not cache any of your website's resources.

## Custom Caching Rules

Users can also create specific caching rules to explicitly control caching per URL and resource types. A "Purge Cache" option lets you purge your entire site or a specific resource on Incapsula server to enable immediate update of new content in the cache (e.g., redesign of site, page, etc.)

**On average, websites using the Incapsula CDN are 50% faster and consume up to 70% less bandwidth, benefiting from our:**

- Dynamic caching technology based on machine learning
- Reliable, self-healing mesh network topology
- Peered, Tier 1 transit system for optimal coverage
- Extensive cache control options
- Rapid cache purging and cache rule propagation
- Integrated security and availability features

## Monitoring Dashboard

Monitor the effect of caching on your website's performance by logging into the Incapsula console and viewing the website dashboard.



## Async Validation

Asynchronous validation serves the cached content to initial visitors with an accelerated user experience, while refreshing the cached content in the background for subsequent visitors. This allows caching for shorter periods of time, without affecting the customer experience.

# Content and Networking Optimization

## Minification

Minification is the process of removing all unnecessary characters from the source code, without changing its functionality. In JavaScript, CSS and HTML code these unnecessary characters usually include white spaces, new line characters and comments, often used to add readability to the code but not required for its execution. Incapsula removes these characters, minimizing web page size and weight. Minification typically reduces network latency by an additional 40% beyond standard GZIP compression.

## Image Compression and Compaction

You can choose the types of image files you want to compress (JPG, PNG). Using aggressive compression for JPG files maximizes performance but may have a minor effect on picture quality. Alternatively, lossless JPG compression keeps the image itself intact, while stripping the metadata embedded in the image.

Progressive image rendering allows pages to load more quickly while rendering multiple images in parallel.



## Session Reuse Optimization

Busy websites have dozens of sessions opened and closed every minute, creating load on the server and adding latency. Session optimization dramatically reduces the number of sessions opened with your web server (e.g., SSL sites) by reusing open sessions, reducing server load and eliminating unnecessary latency.

## TCP Optimization and Connection Pre-Pooling

Opening a new TCP connection adds to website latency. Incapsula uses pre-pooling to reduce connection time by managing connections more efficiently.

Upon the first request to a website, the pre-pooling opens several TCP connections in advance between Incapsula and the origin server, which remain available in stand-by mode. This saves time by allowing the required website resources to be downloaded in parallel without having to open a new connection. Incapsula also uses optimized TCP stacks that can support thousands of incoming connections without slowing down the application.

## On the Fly File Compression

Common web servers and browsers support content compression; however, configuring server resource compression requires technical expertise and consumes valuable web server processing power. Incapsula dynamically compresses HTML, CSS and JavaScript files stored on its servers "on the fly" using GZIP (and HTTP/1.1 chunked transfer encoding where possible) to accelerate page load times.

By compressing your website resources, Incapsula reduces the amount of data sent over the network without the hassle of server configuration.