



AICACHE v6.x SOFTWARE BRIEF

Site Acceleration

Pages load faster with with over **250,000 RPS** (requests per second) served directly from aiCache; freeing capacity in the web farm.

HTTPS support with over 2Gbps of raw AES256 bulk encryption throughput and over 15,000 RSA-1024 sessions per second on common 64bit hardware.

Flexible pattern matching and TTL's give precise control of the cache configuration.

Flexible document freshness controls including cookie-driven and on-demand header-driven cache expiration.

Execute customer-specific code via straightforward and easy-to-implement plugin architecture at the edge.

Highly Available, cluster aware with **VIP** support.

Cost Control

aiCache reduces hardware, software, and hosting footprint, often over 60%.

Dynamic Cloud Caches provide the functionality of CDN's with superior control and reporting while removing the cost and term commitments.

Diagnostics, reporting and smart alerts reduce down-time and support costs.

Diagnostics & Monitoring

Advanced CLI, web and SNMP interface for management, monitoring and troubleshooting.

Monitors and reports health of origin servers while allowing hot swap of servers failing health check.

Built-in smart, non-flooding alerts on RPS, response time, number of client or server connections.

Cloud Deployed

aiCache is available from top cloud providers, allowing rapid deployment and scaling without capital expenditure.

aiCache can proxy traffic to the cloud while data remains in a secure environment.

aiCache is available on:

Amazon Web Services RightScale

Mobile Support

Identifies mobile devices and serves the correct content based on capabilities of device.

Prefetch feature accelerates mobile ad-serving of non-cacheable responses, such as slower 3rd party Advertising APIs.

Protection & Security

Industries most advanced DOS (Denial of Service) and DDOS (Distributed Denial of Service) protection including reverse-turing and access tokens.

Protects against malformed URL's with detailed reporting on malicious attacks.

Admin fallback feature keeps site operational during a catastrophic failure.

The Extras

Load balances requests across a number of origin web servers. Supports server pooling.

Enforces cache authentication for sites requiring logged in users.

SEO friendly on the fly URL re-writing.

One single simple text file configuration. No XML!

aiCache provides 30 day fully functional evaluation copies, 2 free hours of installation support and professional services engagement for more complex environments.



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Accelerate and Improve

aiCache is a unique software product that creates a better user experience by increasing the speed and availability of your site.

aiCache off-loads request processing from the web, application and database tiers, reducing code complexity and the cost for servers, space, power and cooling.

aiCache intercepts and responds to client requests from a RAM-based intelligent cache-response engine. This unique adaptive architecture, optimized for speed and low resource utilization can deliver over 250,000 HTTP requests per second while managing hundreds of thousands of connected clients, all on your own hardware regardless of operating environment.

aiCache employs a right-threaded (only the specified number of workers process requests, no matter how many clients are connected), non-blocking, multiplexed IO design. A mouthful of high tech nerd speak for some, this architecture is without peer in its ability to deliver HTTP throughput.

aiCache provides multi-site, high performance HTTPS support with over 2Gbps of raw AES256 bulk encryption throughput and over 15,000 RSA-1024 sessions per second.

aiCache supports customer-specific code via an easy-to-implement plugin architecture. Your code can examine inbound traffic and tell aiCache to: drop, rewrite, redirect, modify TTL, or provide custom response bodies, all monitored and reported in just a few lines of code.

aiCache reports detailed statistics - such as Requests Per Second, most active URL's, response times, number of cached responses. We report on over one hundred different counters, in real time! aiCache alerts when any critical parameters is out of your defined limits. The aiCache Traffic Reporting Engine has displaced multitudes of other applications at our client sites with a simple self-refreshing, real-time traffic monitor.

In concert with our partners, we offer dynamic, geographically-aware traffic routing and intelligent content delivery. You can distribute aiCache instances in your own datacenters or by tapping into one of our supported Cloud providers tying use directly to cost.

aiCache provides security, mobile client support and numerous other features useful to managing busy websites. We provide pre-configured, ready to run aiCache instances on popular Clouds such as: [Amazon EC2](#) and Rightscale.

Reduce Cost

Popular web sites frequently have infrastructure with dozens (and sometimes hundreds or even thousands) of web, application and database servers. These servers are expensive to acquire, support, power, cool and maintain.

As your website grows it requires additional servers, datacenter space, power and cooling capacity. More infrastructure also means more staff required to maintain the systems. Sites find themselves in a spending spiral that is nearly impossible to break. That is why we created aiCache!

aiCache dramatically reduces the load that is placed on your infrastructure. As the load is reduced, so is the amount of hardware investment and infrastructure that you need to acquire and support.

Our customers have shown, in actual aiCache deployments, removal of up to 98% of load from origin infrastructure. For example, instead of having to serve 1000 requests per second (RPS), your infrastructure now needs to serve only 20 RPS. That is a 50-fold reduction of load on your infrastructure!

With aiCache handling most of the user requests before they are received by your web, application or database servers, you need only a fraction of the servers to deliver higher volumes of traffic.

You can stop acquiring more servers, datacenter space, power and cooling. You can now use your resources for business requirements, like delivering better customer features that put you ahead of your competition.

The exact amount saved after deploying aiCache depends on your setup, but can easily be tens to hundreds of thousands of dollars.

Do you know the real cost of site outages? Would you like to easily diagnose issues before they effect the business? aiCache saves you money by keeping your site fast, responsive and available. With aiCache handling most of your traffic, there's less opportunity for an error conditions to occur in the code or databases to lock up due to high volume of requests. High-traffic web sites know there are many ways that heavy request volume can cause meltdowns.

The sites that stay up enjoy the highest traffic volumes, longer visitor stays and command higher Ad revenue. aiCache is not just great technology it's a business tool designed to reduce your cost and maximize your profitability.



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Protect your site

aiCache offers the most comprehensive protection available from online attacks. With aiCache processing traffic before it reaches your web, application and database servers, we are able to apply our high performance smart identification and mitigation technologies to protect against Denial-of-service and many other types of attacks.

aiCache enforces a multitude of sanity, size and time limit checks on client connections and requests. You can limit requests by size, client connections by duration. Certain URL's can be blocked, overwritten and redirected. Now it is aiCache, not your web servers, that become your first line of defense

One of the most challenging ordeals for web sites is surviving a Denial-of-Service Attack (DOS). During a DOS attack, a significant volume of bogus, specially formed requests are directed at the web site, often from a network of bots - these are compromised computers all over the Internet, now under complete control of the attackers.

aiCache offers the most complete set of DOS & DDOS countermeasures available in the industry. You already know about the first level of defense offered by aiCache, connection and request/response offloading, sanity checking and URL blocking.

The next level of defense is aiCache's ability to block IP address ranges. When you know that certain IP addresses are generating the attack traffic, you can configure aiCache to block all connections and requests from such IP ranges. aiCache servers, when operating in clusters, automatically communicate such blocked IP ranges to each other. You can also whitelist trusted IP ranges, so that they are never subject to any additional DOS countermeasures.

Next level of defense is the Intelligent Request Throttling. This countermeasure limits requesting clients to certain number of requests per interval. aiCache can limit an client to 20 requests every 10 seconds.

aiCache's method of throttling is different from simple RPS-limiting and is much more user friendly. If your typical page consists of 10-15 items, such 20:10 limit will allow users to view a complete page every 10 seconds, presenting no inconvenience for a human, but stopping bot traffic dead in its tracks.

aiCache has special logic, dedicated to punishing repeat offenders - these are bots trying to drive the highest possible volume of attack traffic at your site. The more traffic these bots generate, the more punishment is applied by aiCache.

The final counter-measure is our unique RTATC (Reverse-Turing Access Token Control). This countermeasure challenges the requesting client to prove the presence of a human operator, via a reverse-Turing test. These are tests that any human is capable of passing, while bots stand no chance.

When the operator challenge receives a satisfactory answer, aiCache allows the requestor access to the site by issuing an Access Token. The Access Token has special intelligence so that it cannot be shared, reused or abused.

In summary, we offer industry leading, comprehensive, four levels protection for your site, another benefit from aiCache.

Mobile Support

Mobile users are a fast growing lucrative internet market segment. Content providers who support mobile users enjoy increased page visits and additional advertising revenue. The support of mobile devices presents some unique challenges. The number of mobile devices, differing browser capabilities and lack of Javascript support must all be addressed.

To further complicate things, even the same physical devices can have different software revisions, requiring alternate content to display correctly. Today, there are over a thousand mobile devices combinations, each with slightly differing capabilities. aiCache mobile is a set of services that address content compatibility, uniform page naming, and simplified ad serving all without sacrificing its core acceleration.

aiCache Mobile identifies mobile devices before they contact the web servers and groups them into "families" by device type. aiCache then intelligently redirects the requests to the proper resources that maintain the mobile specific revisions of content. Now your main site is freed from dealing with mobile content, while your mobile site can focus on the small number of families provided by aiCache grouping.

This grouping (compression of device id's) reduces the number of different formats, that your web site has to support, from hundreds to only a few. aiCache can then accelerate the mobile content by keeping device-specific versions of cached content and intelligently issuing the right response to the right mobile device.

Since a large percentage of mobile devices do not support Javascript, logic for ad placement frequently has to be executed server side. The number of calls to advertiser API's increases as Ads are inserted into the mobile pages at render time.

To streamline and reduce the overhead of such server-side API calls, aiCache offers Intelligent Response Pre-fetch. aiCache maintains a queue of ready-to-go responses for the URL that you configure for pre-fetch. When any of these responses are required to render a page, they can be instantly retrieved from aiCache pre-fetch queues, as opposed to being requested at runtime via slow remote API.

aiCache uses special logic to make sure the queues are always maintained at optimal sizes, never overflowing or under-providing. The statistics on the pre-fetch queue utilization are available real-time, via Web, CLI and SNMP interfaces.

The end result of these features is that your mobile site is easily accessible and navigable by the users, served at high speed from the uniformly named web address space and ads are properly delivered without slowing down the performance of your site.



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Scale in the Cloud

aiCache is perfect for cloud computing with its ability to run in virtual environments. We are deployed on a number of Tier-One cloud providers as pre-built images that you can simply turn on as needed. These capabilities are currently available on Amazon EC2, Rightscale.

aiCache in the cloud is a cost-smart approach to content distribution. Our simple pricing models allow you to provision capacity on an as need basis, paying only for what you use. This operating versus capital expense model ties your cost directly to your revenue. Cloud computing and aiCache allow you to scale-up on demand and just as importantly scale-down to manage your budget.

aiCache provides two important technologies enabled by cloud computing. First you can keep your core environment at your existing datacenter. With aiCache instances in the cloud you can move public traffic from your internal network and into the cloud, taking advantage of cloud infrastructure and capacity, without moving the application from your secure local environment. Companies like woot.com use this powerful functionality to manage planned or unplanned spikes in traffic.

aiCache instances can be placed in multiple geographic locations. aiCache provides the ability to geographically route your users to the closest aiCache instance while supporting sophisticated monitoring and failover capabilities with our Dynamic Cloud Cache offering. You can easily route users in Europe, Asia, and even within the Americas to the closest cached content all while maintaining real-time content updates and reporting. You can see the video here

aiCache instances in the cloud contain the complete aiCache functionality including mobile support, comprehensive site protection and reporting functionality. Working with partners we provide a complete set of management tools that enable the kind of mission critical functionality that historically could only be found inside a private datacenter.

If you're a cloud pro you can simply turn on an instance by following step by step instructions in our online Wiki. If you are new to the cloud please contact us for simple real world answers and professional support to learn how aiCache in the cloud can help your business.

Get your life back

Operations teams know how challenging it is to run a popular web site. More traffic means larger infrastructure and more complex support systems. With each level of complexity comes increased probability of outages, slower response times and let's face it: complete site meltdowns.

Sites find themselves spending all their time in fire fighting mode, struggling to keep the site up and to recover the services before the next outage strikes. Living in constant fire fighting mode takes its toll.

First the wear and tear on the support staff, then as developers are inevitably brought in during extended troubleshooting efforts, software delivery times start to slide. The competitions gains ground, as yet another important feature is delayed.

Developers are forced to spend more time coding for speed than the functionality that business is requesting, trying to squeeze another ounce of performance from existing code. They start micro-caching everything and everywhere. Code becomes hard to maintain and page quality suffers.

There is the inevitable financial impact from the outages, as users start to abandon the under performing web site. Now it's a business issue and that puts even more pressure on the technology team. Morale moves to all time low as talent flees to better work environments.

It doesn't have to be this way and after deploying aiCache things will get much better. Gone will be the frequent outages, the technology team will get out of the reactive, fire-fighting mode and be able to concentrate on delivering the new functionality and features that the business requires.

We have heard from our customers that they first thought of our slogan "Get your Life Back." as a marketing gimmick, but after deploying our product, they came to realize that it has, in fact, become a reality for them!

Clean and Green

Did you know that a typical 800W server 24x7, requires burning 2.5 tons of coal annually for power? More energy is then required to cool the datacenters where it is housed. Each year we build ever larger datacenters requiring more energy.

Every ton of coal, when burned, produces about 3 times more CO₂, a greenhouse gas, widely suspected to be causing global warming. Many other chemicals also end up in the Earth atmosphere from burning coal; sulphur dioxide, responsible for acid rains, and trace radioactive elements.

The reduction of servers made possible by aiCache, not only saves you money and makes your site safe and fast, it also helps to reduce human impact on the environment, in a tangible way.

Some of our customers have reduced their server count by over 40 servers. Conservative math shows that burning one hundred tons less coal per year would emit 300 tons less CO₂ into the Earth's atmosphere, helping make our planet a better place for us and and future generations.

We at aiCache are proud that our product helps our planet and we'd like to thank our customers for choosing a responsible solution!



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Product Requirements

aiCache is a software package that runs on any Linux distribution, including, but not limited to, RedHat, CentOS, SUSE, OpenSUSE, Ubuntu. In short, any recent 64bit Linux OS version will work.

There're no special hardware requirements. Depending on the amount of content on your web site, you might benefit from having larger amount of RAM - say 8GB or 16GB. RAM is very inexpensive these days. Please also try and use a machine with a solid high speed network card.

aiCache is a right-threaded application. Only 4 threads are doing all of the request and response processing work, no matter how many clients are connected or how many requests per second your site is pushing. It means that you can have aiCache scale nicely on a multi-core system, yet don't go overboard. A quad-core system is the most you'd ever need.

Should you have servers with more cores, you can run multiple instance of aiCache on the same server to maximize resource utilization. A single aiCache instance is capable of delivering more than 25,000 requests per second so you are not likely to ever need this.

We offer pre-built Cloud images of aiCache, so you don't need your own hardware to run it. If the cloud model makes sense, simply select a Cloud image from one of our cloud providers and you're in business. Of course if you need support we are available to quick start you or match you with one of our partners specializing in your area.

Most web sites deploy aiCache in pairs, for availability reasons. This way if a server is having a hardware problem (and most do, eventually), or you need to restart an aiCache server, you have the other one to take care of the traffic so there's no user impact . When deployed in such fashion, aiCache servers communicate with each other, to simplify management routines.

It is up to you how you direct user traffic at your aiCache servers. Some sites have pre-existing setups with load balancers and firewalls, so they simply add aiCache to the existing VIPs and direct web traffic to the aiCache servers.

Other sites use DNS and setup multiple DNS A and CNAME records to balance web traffic across multiple aiCache instances. In concert with Dyn.com, a leader in DNS solutions, we offer a dynamic, geo-aware DNS routing service that allows you to direct traffic at the hosting location that is the closest to the users. You can also setup flexible traffic overflow rules, for example letting a CDN handle traffic spikes that would normally saturate your uplink capacity.

So there you have it: a small software package that runs on any Linux distribution and requires no special hardware. Should you need assistance with aiCache installation of configuration, we offer turn-key packages, please contact us for more details.