

## Makani Enterprise Web Acceleration

Makani appliances are designed to provide optimization to all enterprise web applications. Makani's Application Acceleration ( AAC™ ) technology is the realization of that flexibility and power.

HTTP (S)/ Web Video	SAP Netweaver	JD Edwards
Siebel	Sharepoint	MS-SQL
Intranet Portals ERP/CRM Apps	Web-based management systems	Oracle 11i/g

**Fig. 1 AAC™ technology accelerates all enterprise/web applications**

Makani provides layer 7 optimizations for HTTP and HTTPS that go beyond its traditional methodologies of WAN optimization. With these optimizations, organizations can make their key web-based applications faster than ever before. The following web-specific optimizations are supported:

- **Read-ahead buffer:** Makani products cache an amount of data (e.g., 400 KB) ahead of what has been sent when retrieving an object from a server. This optimization leads to faster, more efficient web downloads even in the presence of dynamic web content.
- **Read-ahead Range-offset:** Makani products set an upper limit (e.g., 500 KB) on how far into the file an HTTP Range request may be used to *pre-fetch* the whole file. This optimization leads to smoother more efficient streaming of popular web video content, e.g., youtube, cnn, etc.

- **Async-io Caching:** Makani performs asynchronous caching of recently accessed web objects. Async-io caching decouples online web object downloads from I/O intensive disk-based storage. This optimization dramatically improves performance of the cache subsystem especially under high workloads.
- **Always refresh on reload and refresh on If-Modified-Since:** Makani caches recently accessed web objects with its proprietary web caching algorithm. If the web server response does not set an explicit expiry time, i.e., using the “Expires: header“ or “Cache-control: max-age” header, then a proprietary expiration algorithm is used to calculate the expiry time. This expiry time is calculated based on the content (MIME) type of the web object and implies either “refresh” (i.e. cached object is stale) or “cache hit” (i.e. cached object is fresh). However every time a client reloads a web object, or issues a request to contact an origin server, Makani checks the cache for that particular web object. If there is a “cache hit” then it validates the cached object by correspondingly issuing an “If-Modified-Since” request for that object. These cache optimizations help preserve precious WAN bandwidth, accelerate web downloads, and ensure that the cached content is consistent and that the client receives an updated version of the requested object if one is available.
- **Selective web pre-fetching:** When a client accesses a web page, Makani intercepts the request and, in certain cases, download not only the web page asked for, but also the pages for the client to visit next. This technique speeds up many interactive sites. Makani implements an adaptive “learning” technique to decide which pages/objects to prefetch. For example, embedded images tend to be long-lived, and cache very well. Similarly, many data feeds are safe to prefetch, while others may be too time sensitive (for example, a feed of recent updates), or too frequently modified by user actions to be good prefetching candidates. If a client spends most of the time on one particular page or action, then that’s the one to optimize. For instance in Web Albums, the most common action is navigating from one photo to the next, and an excellent candidate for prefetching.
- **Preemptive DNS resolutions:** Makani can also intercept DNS queries and can resolve these queries leading to more efficient and faster web browsing.
- **Aggressive parallel downloads:** Makani transforms the normally sequential web requests into multiple parallel requests creating additional optimization benefits.

## Conclusion

Unlike other vendors, Makani implements a true Web Optimizing/Caching Proxy built right into the appliance. Having an application-level Web Caching proxy means that Makani appliances have better control over web/enterprise connections, and have the ability to perform optimizations not available with other generic optimizations.

Because each Makani product has a deep understanding of the Web protocols, it can therefore act on behalf of a client to make the web interaction much more efficient. This results primarily in a dramatic improvement in Web Access and Browsing functionality while accelerating remote access to web documents at high speeds. The Makani Web acceleration also works seamlessly with Makani Latency Buster™ architecture and will benefit from its ability to reduce data traversing the WAN just as other applications. All of this ultimately results in a solution that delivers vastly improved web/enterprise performance over the WAN, while delivering consistent, predictable, fast performance for all WAN users.



Makani offers high-performance, easy-to-use and technically innovative solutions for next-generation wide-area networked data services. Makani Enhancers™ are deployed for wide-area data acceleration and optimization. Makani Mobilizer™ appliances are deployed in the customer's network for blazing-speed data access over a wide-range of access networks. Founded in 2006, Makani is headquartered in San Francisco with regional offices all over the world.