

# Publishing Live Access Databases on the Web to Avoid Rewriting Applications

*EQL Data Inc.*

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## Abstract

For better or for worse, Microsoft Access databases are widespread in most enterprises. These databases are critical for day-to-day operations, but introduce significant performance, manageability, and security concerns. Web-based applications can avoid these problems, but redesigning for the web is expensive, time consuming, and risky. This paper discusses an alternative to rewriting: using web-server based hosting to immediately make existing, unmodified Access applications more manageable.

## Problems Introduced by Access Databases

Microsoft Access is available on nearly every business desktop. With it, even non-technical users can develop database-driven applications for their workgroup, and these applications eventually become a critical part of the group's business processes. But Access applications can be challenging for a business to keep running, for several reasons:

### Limited scalability and performance

Access databases have limits to how fast they can run, and how many users they can support. A database is very fast when it runs from a local disk, but shared databases need to lock all transactions over a network, causing dramatic slowdowns.

### No support for remote users

Because Access databases exchange data using a file server, performance outside the local area network (LAN) is intolerably slow. One option is to set up Windows Terminal Server or Citrix, both of which are expensive and complicated and require IT department assistance.

### Limited security and auditability

Access uses *client-side security*, which makes it impossible to provide effective fine-grained access control. Access security restrictions are easily bypassed using hacks that are readily available on the web.

Access has no automatic audit log facility (for tracking who has changed which records at what time). It's also easy for any user to make a copy and take sensitive information home to be used at a later date.

### Downtime during upgrades

Access databases combine data and application code into the same file. Thus, changing the application requires all users to log out for the entire duration of the changes. Even if the front- and back-ends of the database are split into separate files, there will still be conflicts if the developer needs to change table structures. For critical applications, this means either unacceptably long downtime or heavy restrictions on development (for example, if changes can only be made on evenings and weekends).

### Too expensive to replace

Access databases quickly become a critical part of a company's infrastructure, evolving with the business for years at a time. Modern web-based systems are great, but rewriting even one Access application for the web requires throwing everything away and starting over. A single rewrite can take several months and tens of thousands of dollars, may produce results inferior to the original, and sacrifices years of fine tuning. And in all cases, users will need to be retrained.

Surely there must be a better way.

## Solution: EQL Access OnWeb

The solution proposed by EQL Data is called **OnWeb**. It solves all these problems, without sacrificing the many advantages of Access or rewriting applications. Most Access applications will run unchanged with OnWeb.

### How OnWeb works

OnWeb has two parts: an Access plug-in, used by the application developer, and the server, which runs applications in your web browser.

After installing the plug-in and pressing **EQL Synchronize**, your database is disassembled into its components (tables, queries, forms, reports, macros, and modules) and uploaded to the server. There, the parts are reassembled and published to the web. The entire process typically takes less than 60 seconds.

To start a session, the server launches Access using VNC, which is similar to Windows Terminal Server or Citrix. The VNC session displays in your browser using Adobe Flash.

The Access application running on the web is identical to the original, including all the same forms, reports, macros, VBA code, and toolbars. Reports are handled by printing to a “virtual printer” that sends PDF files to your browser.

### Performance

A single OnWeb server machine with 4 gigabytes of RAM hosts about 80 simultaneous user sessions. The number of sessions tends to be memory bound, not CPU bound.

Transactional performance of an OnWeb-hosted database is better than a LAN-hosted one. All instances of the application run on a single machine, so transactions can be coordinated without any network synchronization, greatly improving data read and write speeds.

Peak network bandwidth used by a VNC session is less than 50 kbytes/sec. Performance is good even with dozens of WAN users active at once.

### Security

All access to each database is controlled by the OnWeb server. OnWeb keeps a complete log of which data and objects were changed and when, so it's easy to isolate changes that caused a problem. OnWeb also makes it easy to restore to any earlier version of the database.

Users can't download the database files directly, which eliminates the danger of users taking copies off-site. Remote

	Native Access	Access with EQL OnWeb
LAN Performance:	Transactions cause network traffic	Transactions use server's local disk
WAN Performance:	Unusably slow	Like a web app
Downtime during upgrades:	Can't update while users logged in	Updates happen in parallel
Access controls:	Unenforceable (client)	Enforced (server)
Auditability:	No logging	Automatic, detailed logging
Backups:	File server-based	Centralized with revision history

Table 1. Comparison of basic Access databases with OnWeb-hosted configuration

users can access OnWeb (for example, over a VPN), but won't have a copy once permissions are revoked.

### Reduced downtime

As a developer, you can keep making changes to an Access database while users do their work. When you click **EQL Synchronize**, OnWeb will merge your new version into any changes on the server, publishing the combined version on the web. There is no need for users to log off first.

### No need to rewrite applications

OnWeb works with your existing, unmodified Access applications. You don't incur the cost, time delay, and risk of rewriting for the web.

### Microsoft SQL support

With a small amount of reconfiguration, Access databases which connect to Microsoft SQL will also work with OnWeb.

### Deployment options

OnWeb is available as a hardware plus software appliance, or as a VMware “virtual appliance” disk image to run on your VMware infrastructure. EQL Data also hosts “cloud” servers on the Internet for some of its customers.

### About EQL Data

EQL Data was founded in Toronto in late 2008 and specializes in tools for Microsoft Access. Find out more at <http://eqldata.com>, or email us at [info@eqldata.com](mailto:info@eqldata.com).