

[A Simple Exercise in Scalability](#)

By [Roger Keays](#), 30 April 2008

All our customers at [Sunburnt](#) are running the same apps from the same codebase which makes life so much easier, but also presents lots of opportunity for scaling up. Here's a few different ways we've deployed these Java webapps:

1. **Multiple contexts with the same docbase (MM).** Each site runs the same code and provides their custom configuration using environment variables. Classes and libraries are deployed in the standard WEB-INF/classes and WEB-INF/lib directories.
2. **Multiple contexts with a shared classloader (MS).** This is the same as above, except classes and libraries are deployed to the webapp's shared classloader (`${catalina.home/lib}` on Tomcat 6.0). It means each context doesn't need to load the classes anew.
3. **Single context with a single classloader (SS).** Since our apps were always intended to be run in a multisites configuration, it wasn't too difficult to rewrite the key classes so that all deployments can run in a single context. It's actually the same application, but to the customers they look quite different thanks to our configuration framework.

So, how does each of these methods scale? Here are the rough performance figures for a deployment of 35 sites.

	MM	MS	SS
Startup time	90 s	60 s	<i>4 s</i>
Startup heap usage	50 MB	45 MB	8 MB
Running heap usage	90 MB	75 MB	35 MB
Running nonheap usage	198 MB	<i>42 MB</i>	42 MB

Most of that startup time goes into loading JSF servlets. Going from 35 servlets to one makes startup almost negligible. All that nonheap memory is just classes loaded into the PermGen space. Using a single classloader makes a big difference and is a pretty simple thing to do.

We've found there are similar order of magnitude performance improvements to be made by configuring OpenJPA - particularly in relation to caching, and we're now moving from one EntityManagerFactory per site to one EntityManagerFactory per context (these factories do a lot of caching).

About Roger Keays



Roger Keays is an artist, an engineer, and a student of life. He has no fixed address and has left footprints on 40-something different countries around the world. Roger is addicted to surfing. His other interests are music, psychology, languages, the proper use of semicolons, and finding good food.