



HOSTING CLUSTER USE CASE
FOR JOYENT'S GRID ACCELERATORS

THE POWER TO SCALE

Jason A. Hoffman, PhD

Chief Technical Officer and Co-Founder

Summary

In Joyent's *Grid Accelerator Use Case* series of documents we share the complete details of real user setups along with the cost scenarios. They include clients that have needed larger scale hosting clusters, java application deployments, MySQL cluster backends and process driven applications written in Ruby on Rails, Python (using the Django framework) and Erlang.

Joyent's Grid Accelerators are on-demand compute, storage and bandwidth, have enterprise add-ons and developer products, and Joyent helps Accelerator customers with a range of services. For more details on Joyent's Grid Accelerator infrastructure and complete offerings download <http://media.joyent.com/GridAccelerators-Whitepaper.pdf>.

This use case describes an 8-node, load-balanced PHP hosting setup with shared files, centralized LDAP-based user authentication for SFTP, and a dual master MySQL backend.

A Hosting Cluster: Use Case and Costs

Background

A company that offers weblog and file hosting to professional photographers wanted to build a resilient hosting cluster for their customers. They essentially wanted an equivalent of Media Temple's "Grid Server"¹. All of the sites are PHP-driven and customers have SFTP access to an area to add static files.

The basic components of their setup:

1. BIG-IP 6400s for load-balancing and traffic normalization of web and SFTP traffic.
2. Web and PHP application containers running Litespeed + PHP 5 + eAccelerator.
3. MySQL application containers.
4. LDAP system user container for SFTP authentication.
5. Two common NFS mount stores: one for configuration files (web server) and one for user files.
6. Access to a centralized SMTP infrastructure for sending out emails to their customers

They asked that all files be backed up daily via ZFS snapshots.

The initial order (prices are monthly)

1. BIG-IP load-balancing. 8 node dynamic web and SFTP (layer 3) at \$100/node for \$800.
2. Web and PHP application servers. Eight \$125 containers. These are 1GB of RAM each, with an AMD opteron 285 CPU equivalent with burstability to 32 CPUs, and 480GB of bandwidth.

¹ Note that the "grid" setup is more appropriately described as a simple web hosting cluster.

3. MySQL application servers. Two \$250 containers. These are 2GB of RAM each with an AMD opteron 285 CPU equivalent with burstability to 8 CPUs, and added 200GB of bandwidth to the aggregate.
4. LDAP system user containers for centralized authentication. One \$125 container.
5. Centralized SMTP out.

The initial aggregates for the web and application tier were

- 8GB of RAM
- 80GB of distributed NFS mounted storage
- 750GB of public bandwidth transfer per month.

The initial aggregates for the MySQL tier were

- 4GB of RAM
- 50GB of block storage
- Unlimited private network bandwidth transfer per month.

Additional space and bandwidth were available at utility pricing: \$1/GB/month (mirrored primary), \$0.50/GB/month (secondary "buckets") and \$0.20/GB (bandwidth)

Their ongoing monthly costs for this initial multi-tiered setup was \$2425.

This for an 8-node, load-balanced PHP hosting setup with shared files, centralized LDAP-based user authentication for SFTP, and a dual master MySQL backend. The setup has sufficient bandwidth for 2,000,000 hits a day in addition to serving each and every image file that they're currently hosting at least once, and can handle more than 10,000 typical virtual hosting domains.

How would this scale?

1. Scaling the load-balancing: \$100/month/node
2. Scaling the application servers: \$125/month/node (scale up and/or out)
3. Scaling the MySQL application servers would be in \$125-250/month increments to scale *in situ* (can be currently done up to 32 CPUs), and then when it is appropriate to scale out slave MySQL servers for distributing reads, those would scale out as \$125/month nodes.
4. Additional bandwidth can be kept at a straight utility or pre-purchased. There is no costs difference between the two.
5. They may need to devote future containers to SMTP (mail services).

Joyent Systems Consulting

The clients are experienced developers but also have retained 10 hours a month of system's support at \$1200.



JOYENT has been in the business of hosting small to large applications since 2004, and via its TextDrive hosting product was the first to ever support Ruby on Rails applications. Joyent's founders and engineers have experience with some of the world's large web, email and newsgroup infrastructures, as well as academic and applied backgrounds in distributed systems. Joyent also has a series of web-delivered applications, and every month handles more than 100 million emails and 150 million unique web hits.