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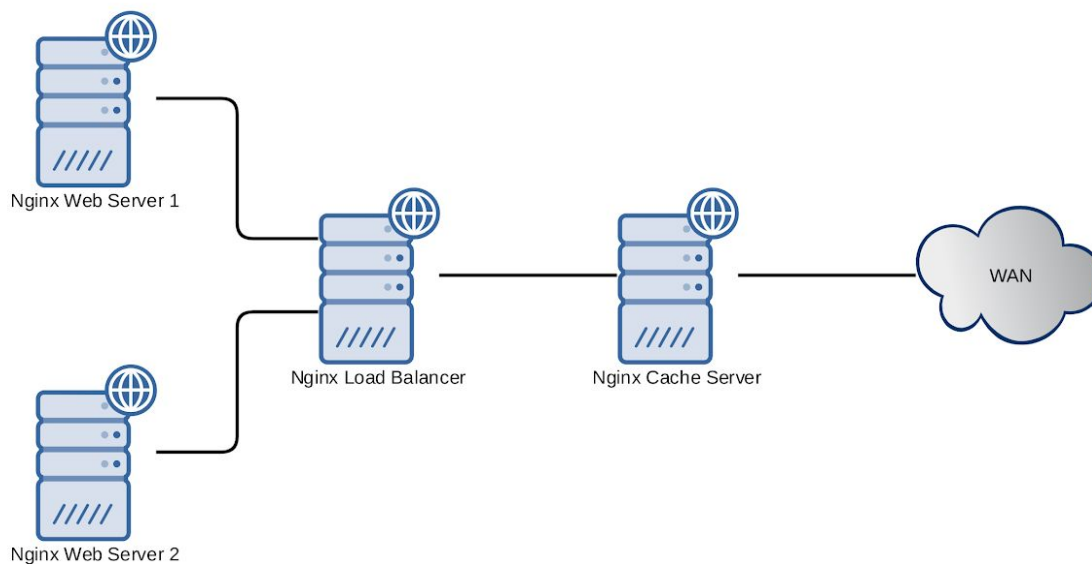
September 8, 2019

CSEC-380

Homework 1 Writeup

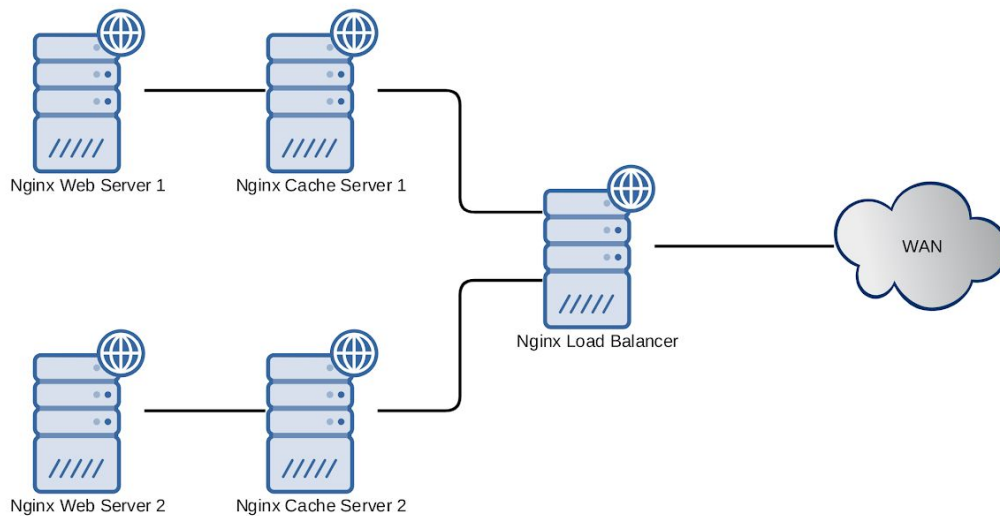
From my experience, I have found Nginx to be both simple and extremely robust in its capabilities. Configuring Nginx is very straightforward and requires little modification to make it a caching server or a load balancer. Therefore, I used Nginx for all parts of this assignment. Keeping my infrastructure homogenous made configuration and setup much simple and faster because I did not have to deal with any weird bugs that could arise from using different technologies.

Topology:



Here is the topology that I have created. I decided to place the caching server in front of the load balancer so that it can serve content to clients if it has that content cached. If the caching server does not have the content cached it will pass the request to the load balancer. The load balancer will then round robin the requests between the two web servers that are behind it. These choices were made to ensure that a client would be able to receive the content as fast as possible while still protecting the web servers from being flooded with requests.

Alternative Topology:



Here is an alternative topology to the one that I just talked about. This setup would be useful if you are dealing with a lot of requests per second from around the world. You could have different caching servers for different areas of the world and the load balancer would send requests to the correct regions' cache server.

Using these technologies together is necessary to provide content to a user efficiently and provide resiliency. The web servers are necessary in order to serve the content we want

people to see. A cache is used to quickly serve unchanging content to a user. Using a cache also reduces the processing load on the web servers. A load balancer, in this situation, is used to round-robin requests to the two web servers. This spreads the number of requests evenly across the two web servers. This reduced load allows the infrastructure to handle more traffic before performance becomes an issue.

For this assignment, using all of these technologies together to serve a simple text page is a little overkill, however, using a load balancer, even in this situation, is beneficial. The load balancer allows a lot more traffic to be handled by the web servers regardless of the content being served. The cache, on the other hand, doesn't help too much. Since we are only serving a simple text page, there is no need to cache the content because serving a static text file requires very little resources. If there were a lot of CSS files and some javascript to load, then the caching server would help a great deal.