Improving Content Management System Performance and the Web

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What makes a well designed website?

Characteristics

1. _User Friendly_ - Well designed sites are constantly updated with new content and have it displayed in a neat and easily accessible manner to allow visitors to find the information they searching for quickly.
2. _Backups/Portability_ - Have backups made at regular intervals and after major website events such as upgrades or additions for easy restoration due to possible server failure and attacks.
3. _Employ Proper SEO Techniques_ -Utilize SEF URLS and place appropriate meta tags in the site content to attract human visitors as well as spiders.
4. _Appropriate Meta Keywords and Description_-The meta description is a one sentence snapshot of the site and meta keywords which describe the content more vividly go on every page.
5. _Proper Image labeling_ - Images should have the proper text associated with them for proper download file names and blind visitors with screen readers who will hear the description of the picture or file.

What makes a website perform well?

Test Runs

Benchmark 1:
Original site with "Legacy" code plugin turned on. Both 1.0 and 1.5 Joomla1 components, Modules, and plugins are operating.

Benchmark 2:
Component, Module, and Plugins upgraded to Joomla! 1.5. Joomla! core code was updated to the latest version.

Benchmark 3: Code Validation
XHTML and CSS Validation errors were corrected to comply with W3C standards.

Benchmark 4: Custom Template
A template made specifically for these tests was deployed in an attempt to reduce HTTP requests.

Benchmark 5: Cache
Cache was employed to lower the amount of requests for the components and modules of the page.
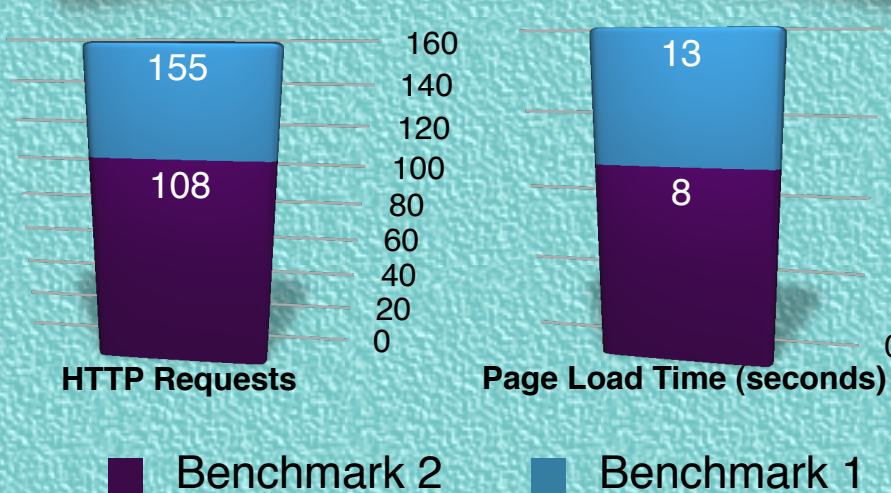
Rapid Connect Test:
Tests to see if the time the tests were taken had an effect on the overall numbers. Sometimes the test was taken at a high traffic hour VS a lower traffic hour.

Simulated Private Server:
The website was installed on a local computer using Bitnami to simulate a private server to show how the site would perform with all network traffic removed and full server resources dedicated to it.

Testing Conditions
Trials were taken once an hour for 8 hours starting at 9:00 AM until 5:00 PM using the performance benchmarking website joomlaperformance.com.

	HTTP Requests	Download Speed	Download Time	AVG KB/ Sec	Generation Time
Benchmark 3	30	2.163	9.61	17.0	2.97
Benchmark 4	18	1.803	8.67	24.6	3.94
Benchmark 5	30	3.168	9.34	18.5	2.3
Rapid Connect Test	39	7.496	8.39	14.9	0.56
Simulated Private Server Test	17	45.496	0.536	50.4	0.27
Scale	Number of Requests	Kilobytes per second	Seconds	Kilobytes per second	Seconds
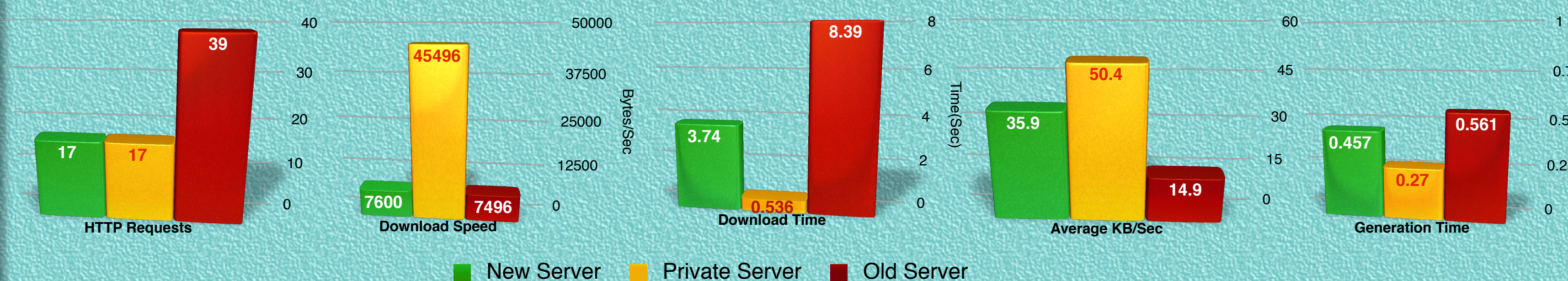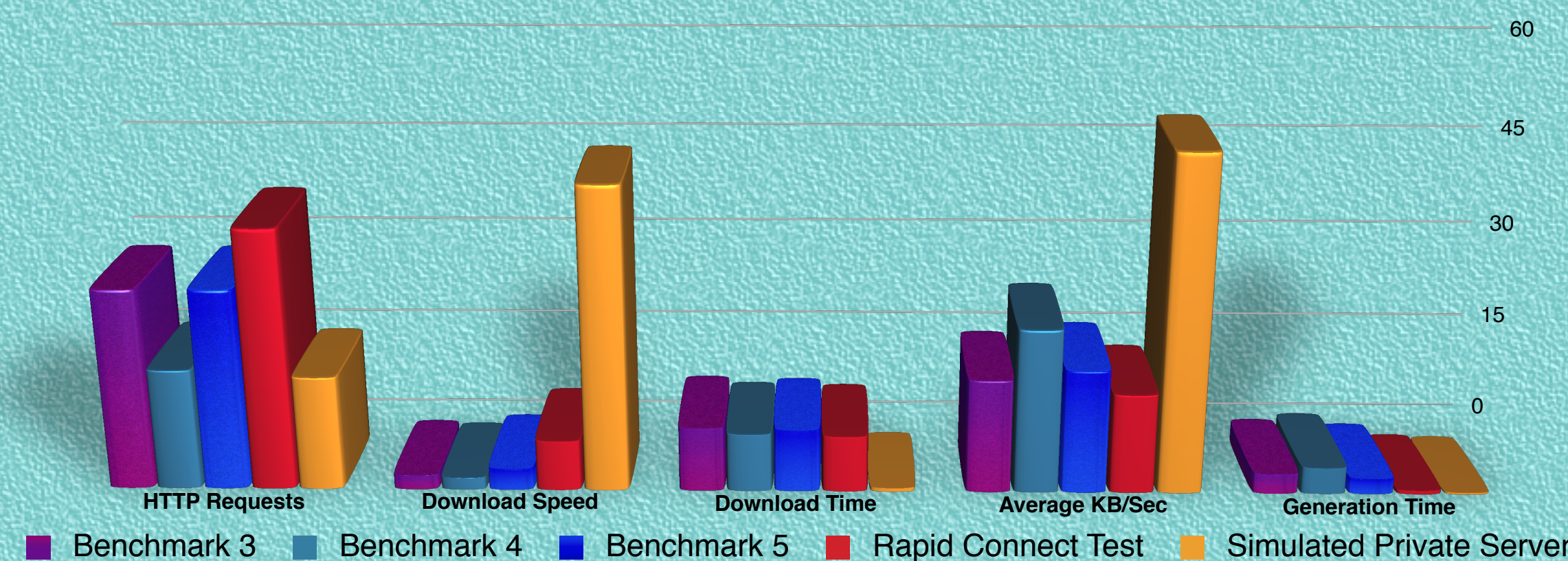
Major Performance Factors

- _Valid XHTML & CSS_ - XHTML and CSS code should comply with the W3C standards, resulting in faster load time for browsers because the browser does not have to "guess" the page layout.
- _Updated Components, Modules, Plugins_ - Updating these items provides security updates as well as code improvements to speed and extension functionality.
- _Lean Module Loading_- Load only the modules that are necessary to the page! Modules can even be set to load only onto certain pages to reduce data requests.
- _Server Cache_ - Utilize system and component cache to prevent full page requests. Instead only the changed data will be sent. The cache will be regenerated after a set period of time.
- _Server Environment_ - Joomla performs best in a 64 bit environment.