

Evaluating Compression with Radmind

Patrick M. McNeal - mcneal@umich.edu

April, 26, 2006

With Radmind 1.6.0, users have the ability to turn on compression. This article will explore when it is beneficial to use this feature.

Adding compression to Radmind was first suggested by a group of developers from Cisco. They use radmind to maintain a worldwide deployment of laptops. As many of their clients are not connected to the internet on a high speed link, compression was seen as a way to reduce update times.

With compression enabled, Radmind will compress the entire communication channel between client and server using the zlib compression library. zlib supports a range of compression levels - 9 is the highest, 1 is the lowest, while 0 indicates no compression.

To use compression, the Radmind administrator must first enable it on their radmind servers. Once enabled, the Radmind client tools, version 1.6.0 and later, can request a compression level up to the maximum set by the server. For example, if the server is configured to use a compression level of 6, the client can request compression levels ranging from 0 to 6.

To see how compression behaves, I ran a number of tests. I used an intel iMac as my client and an xserve as my radmind server, configured to offer a maximum compression level of 9. My script ran lapply using each compression level 0 though 10, ten times, applying the same apply-able transcript. The first set of test were run using a wired, gigabit ethernet connection, while the second test was run using an 802.11g connection. Results are shown in figure 1 and figure 2 respectively.

Figure 1
lapply on Gigabit Ethernet

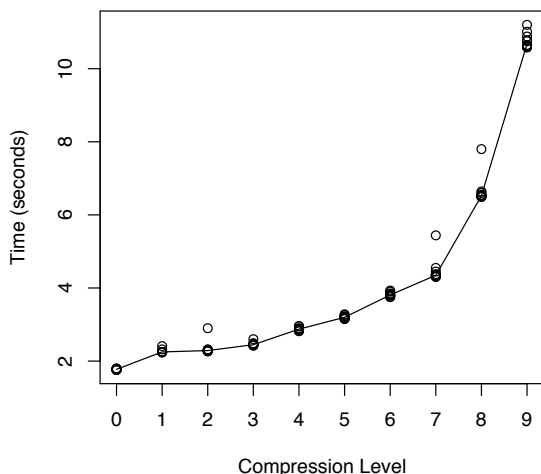
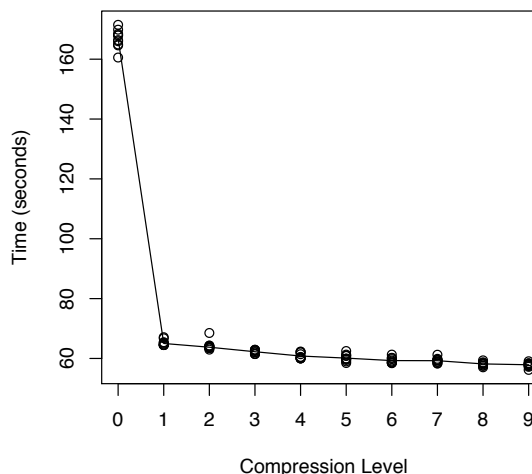


Figure 2
lapply on 802.11g



On gigabit ethernet, compression increases the time required for lapply because the server is unable to compress the data while continuing to use all available bandwidth. Increasing the compression level only exasperates the problem by requiring the server to do more work compressing the data.

With wireless though, the exact opposite is true. The slower network speed gives the server more time to compress the data without impacting it's ability to saturate the network connection. Even at the highest compression level, the server is able to process all data and saturate the wire.

Based off of network speed and server load, it is up to the administrator to determine when to enable compression. If all clients are on a high-speed, wired connection, compression doesn't provide a speed improvement, but for clients on a slower link, even the lowest level of compression significantly improves apply time. In a mixed wired-wireless environment, a constant compression level of 1 has only a small negative impact on a wired connection, and a large positive impact on a wireless connection.