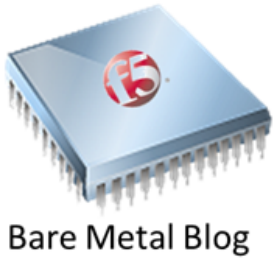
Bare Metal Blog: Throughput Sometimes Has Meaning

Don MacVittie, 2012-20-12

#BareMetalBlog Knowing what to test is half the battle. Knowing how it was tested the other. Knowing what that means is the third. That's some testing, real clear numbers.



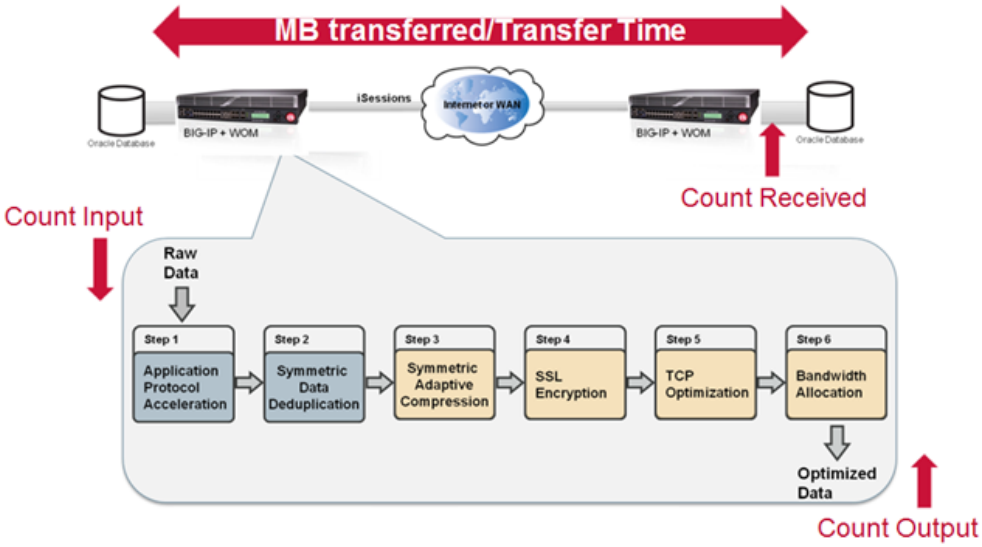
In most countries, top speed is no longer the thing that auto manufacturers want to talk about. Top speed is great if you need it, but for the vast bulk of us, we'll never ***need*** it. Since the flow of traffic dictates that too much speed is hazardous on the vast bulk of roads, automobile manufacturers have correctly moved the conversation to other things – cup holders (did you know there is a magic number of them for female purchasers? Did you know people actually ***debate*** not the existence of such a number, but what it is?), USB/bluetooth connectivity, backup cameras, etc. Safety and convenience features have supplanted top speed as the things to discuss.

The same is true of networking gear. While I was at Network Computing, focus was shifting from "speeds and feeds" as the industry called it, to overall performance in a real enterprise environment. Not only was it getting increasingly difficult and expensive to push ever-larger switches until they could no longer handle the throughput, enterprise IT staff was more interested in what the capabilities of the box were than how fast it could go. Capabilities is a vague term that I used on purpose. The definition is a moving target across both time and market, with a far different set of criteria for, say, an ADC versus a WAP.

There are times, however, where you really do want to know about the straight-up throughput, even if you know it is the equivalent of a professional driver on a closed course, and your network will never see the level of performance that is claimed for the device.

There are actually several cases where you will want to know about the maximum performance of an ADC, using the tools I pay the most attention to at the moment as an example. WAN optimization is a good one. In WANOpt, the goal is to shrink the amount of data being transferred between two dedicated points to try and maximize the amount of throughput. When "maximize the amount of throughput" is in the description, speeds and feeds matter. WANOpt is a pretty interesting example too, because there's more than just "how much data did I send over the wire in that fifteen minute window". It's more complex than that (isn't it always?). The best testing I've seen for WANOpt starts with "how many bytes were sent by the originating machine", then measures that the same number of bytes were received by the WANOpt device, then measures how much is going out the Internet port of the WANOpt device – to measure compression levels and bandwidth usage – then measures the number of bytes the receiving machine at the remote location receives to make sure it matches the originating machine. So even though I say "speeds and feeds matter", there is a caveat. You want to measure latency introduced with compression and dedupe, and possibly with encryption since WANOpt is almost always over the public Internet these days, throughput, and bandwidth usage. All technically "speeds and feeds" numbers, but taken together giving you an overall picture of what good the WANOpt device is doing. There are scenarios where the "good" is ***astounding***. I've seen the numbers that range as high as 95x the performance. If you're sending a ton of data over WANOpt connections, even 4x or 5x is a huge savings in connection upgrades, anything higher than that is astounding.

This is an (older) diagram of WAN Optimization I've marked up to show where the testing took place, because sometimes a picture is indeed worth a thousand words. And yeah, I used F5 gear for the example image… That ***really*** should not surprise you .



So basically, you count the bytes the server sends, the bytes the WANOpt device sends (which will be less for 99.99% of loads if compression and de-dupe are used), and the total number of bytes received by the target server. Then you know what percentage improvement you got out of the WANOpt device (by comparing server out bytes to WANOpt out bytes), that the WANOpt devices functioned as expected (server received bytes == server sent bytes), and what the overall throughput improvement was (server received bytes/time to transfer).

There are other scenarios where simple speeds and feeds matter, but less of them than their used to be, and the trend is continuing. When a device designed to improve application traffic is introduced, there are certainly few. The ability to handle a gazillion connections per second I've mentioned before is a good guardian against DDoS attacks, but what those connections can do is a different question. Lots of devices in many networking market spaces show little or even no latency introduction on their glossy sales hand-outs, but make those devices do the job they're purchased for and see what the latency numbers look like. It can be ugly, or you could be pleasantly surprised, but you need to know. Because you're not going to use it in a pristine lab with perfect conditions, you're going to slap it into a network where all sorts of things are happening and it is expected to carry its load.

So again, I'll wrap with acknowledgement that you all are smart puppies and know where speeds and feeds matter, make sure you have realistic performance numbers for those cases too.

Technorati Tags: Testing,Application Delivery Controller,WAN Optimization,throughput,latency,compression,deduplication,Bare Metal Blog,F5 Networks,Don MacVittie
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F5 Networks, Inc. | 401 Elliot Avenue West, Seattle, WA 98119 | 888-882-4447 | f5.com

F5 Networks, Inc.
Corporate Headquarters
info@f5.com

F5 Networks
Asia-Pacific
apacinfo@f5.com

F5 Networks Ltd.
Europe/Middle-East/Africa
emeainfo@f5.com

F5 Networks
Japan K.K.
f5j-info@f5.com