The Silent Performance Killers: BIOS and Firmware Updates

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Definitions:

BIOS (Basic Input/Output System) – Firmware used to perform hardware initialization during boot time and to provide runtime services for operating systems and programs.

Firmware – Specialized software that is embedded into hardware devices to provide low-level control of the devices. Provides the ability to fix bugs, add features and enhance performance.

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Updates From Vendors

- Vendors update firmware on a regular basis
  - Bug fixes
  - Security vulnerability fixes
  - New features
  - Enhancements

Computers, cars, phones, ovens, cables – all contain firmware that are updated over time

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What you may have started with/where you are after an update

Where we started

Where we wound up

Why?

After the determination to release a new firmware version, vendors tend to check for functionality, not overall impact

It is up to you to develop a strategy, as well as associated tests, so you can detect any changes to your system

What?

- Servers for testing that mimic those running your applications
  - I/O-based benchmark tests
  - CPU-based benchmark tests
  - Memory-based tests
  - Overall (I/O, CPU, memory) benchmark tests

- Develop a few tests based on your applications (look at transaction times, system times, user times and overall times)

- Run the benchmarks on a regular basis to establish a history / baseline

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How?

- Get data into some observability platform
  - Gather data pre-test
  - Gather data post-test
  - Compare the datasets, look at your measurements of central tendency
  - Calculate your percent change/differences
  - Report on results

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Examples

- Firmware comes out to fix a security vulnerability
    - Load it on your benchmark system
    - Make sure you have pre-test data
    - Get a good number of sample runs
    - Compare post-test results to pre-test results, look at measures of central tendency
    - Look at minimums and maximums
    - Review completion times

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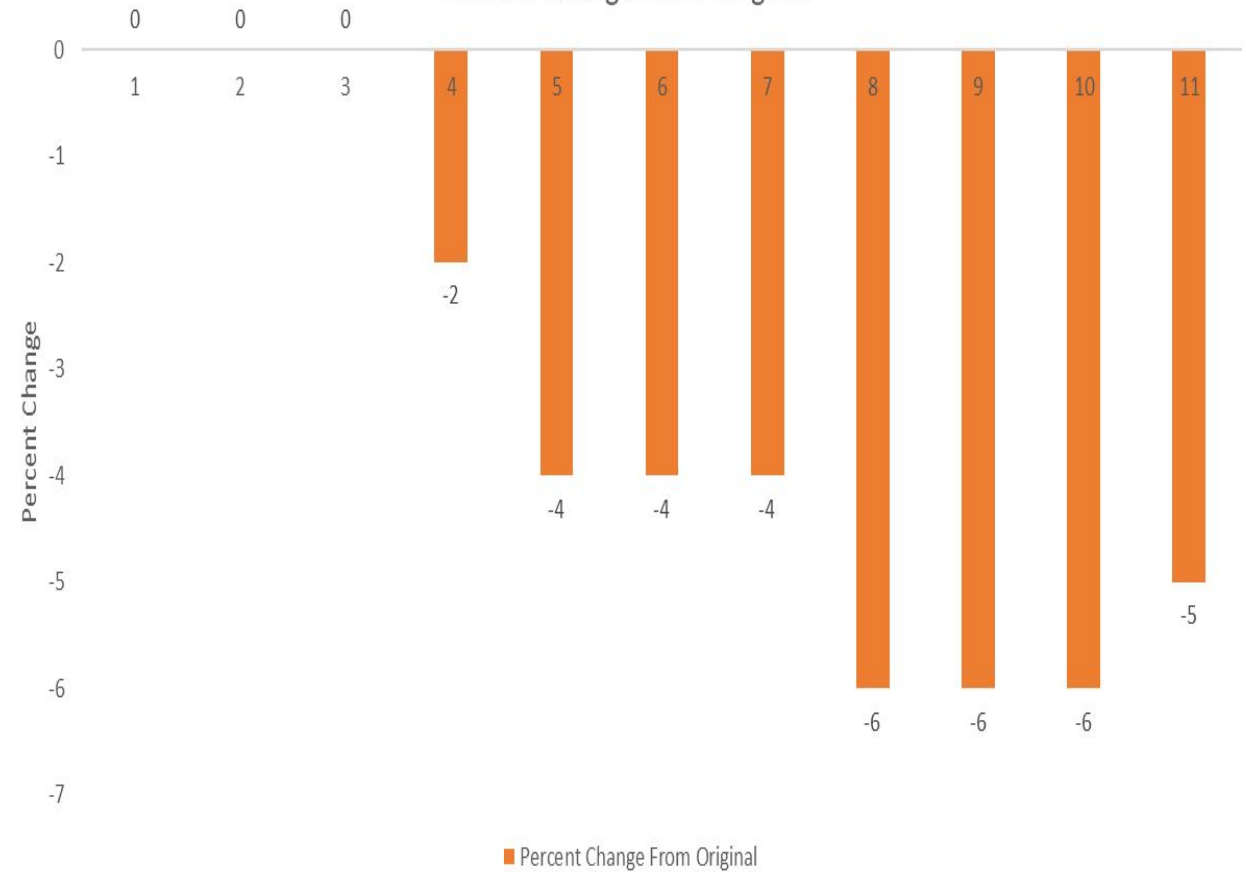
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Track Over Time

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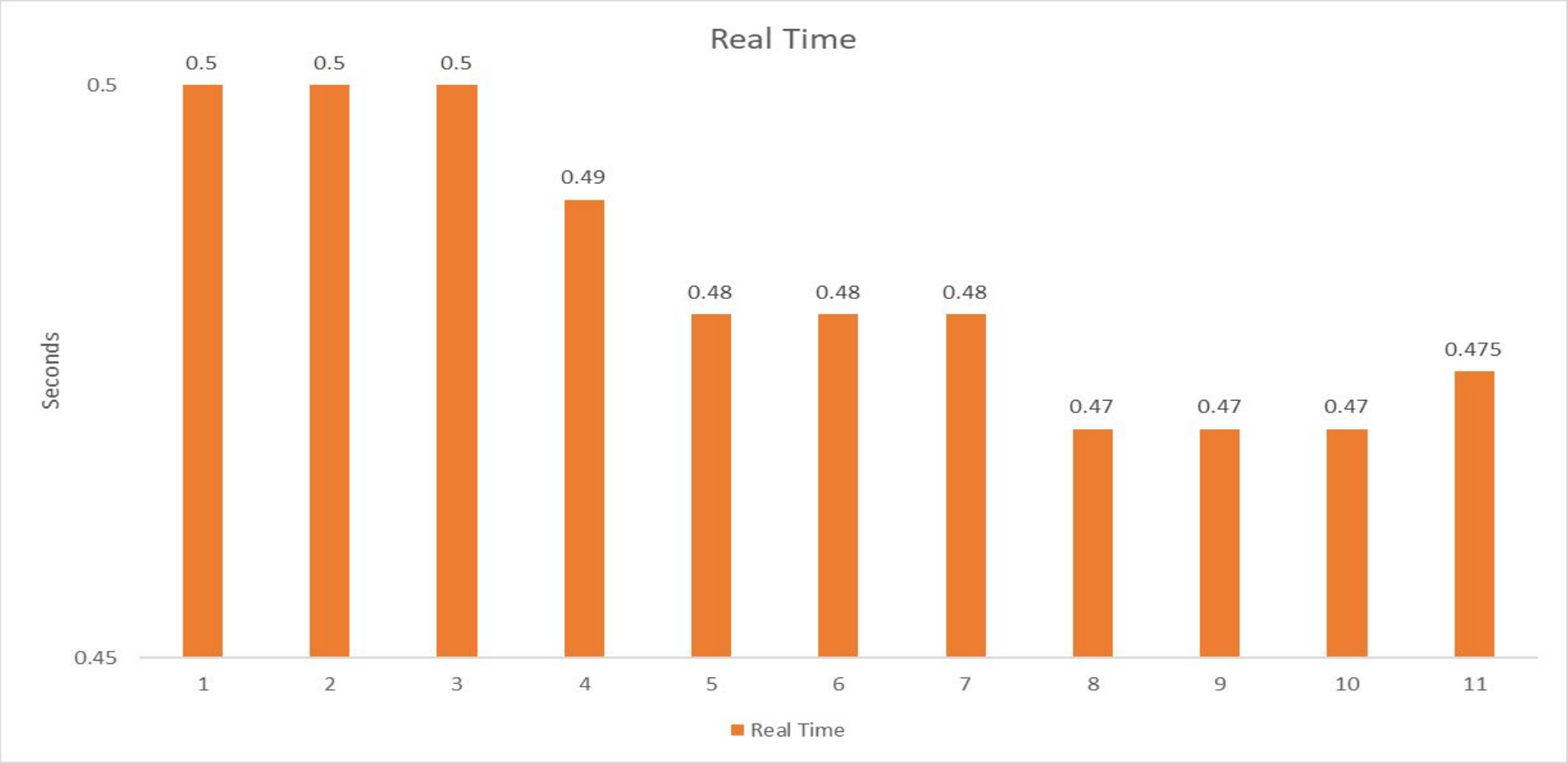
Don't Forget Your Starting Point

Percent Change From Last Version
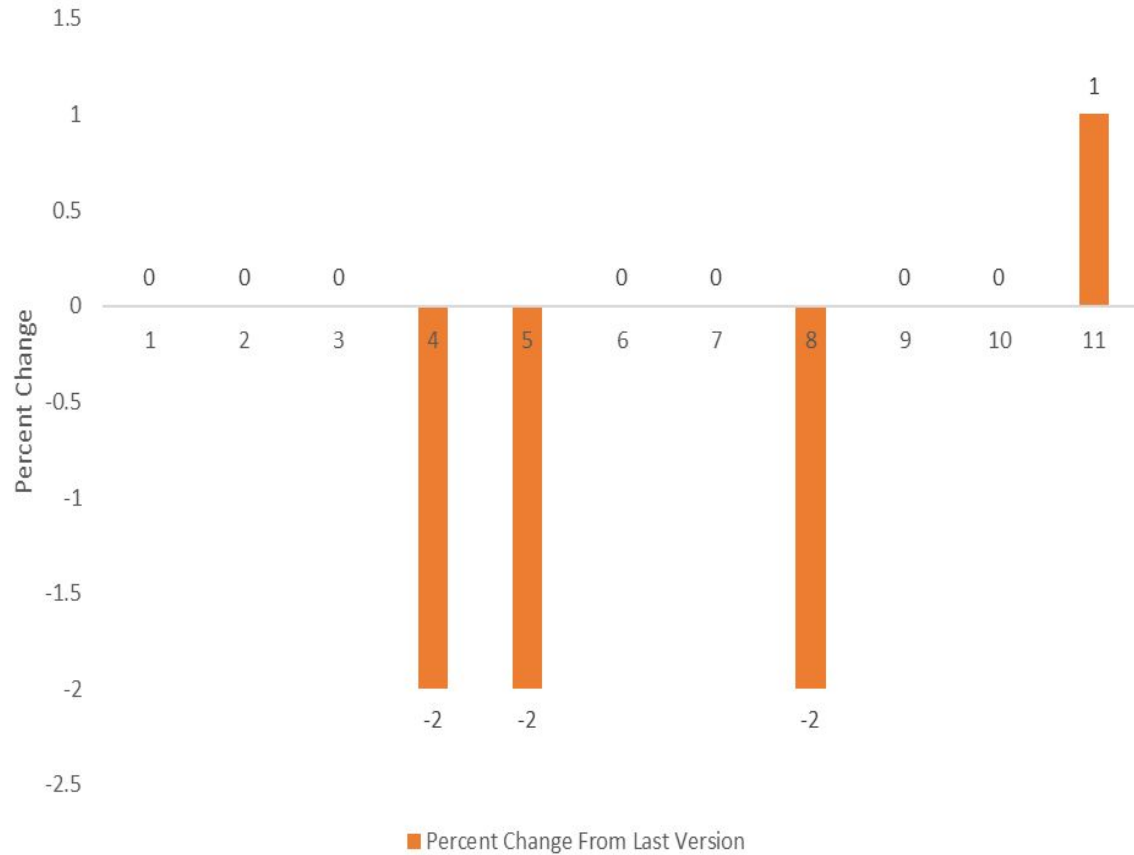
Percent Change From Original

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Real World Example
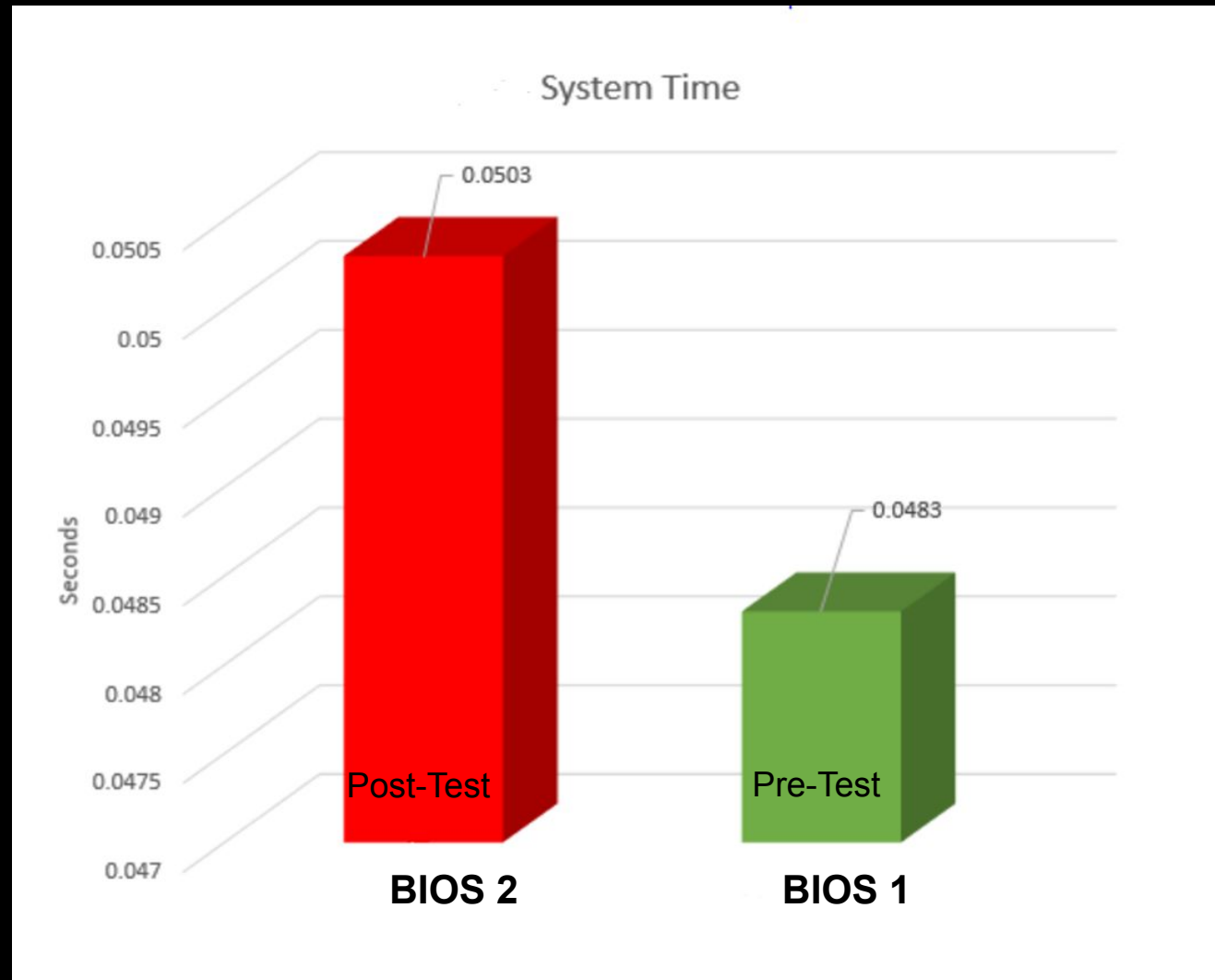
There is a 10.35% difference between versions

System Time

User Time

Real Time
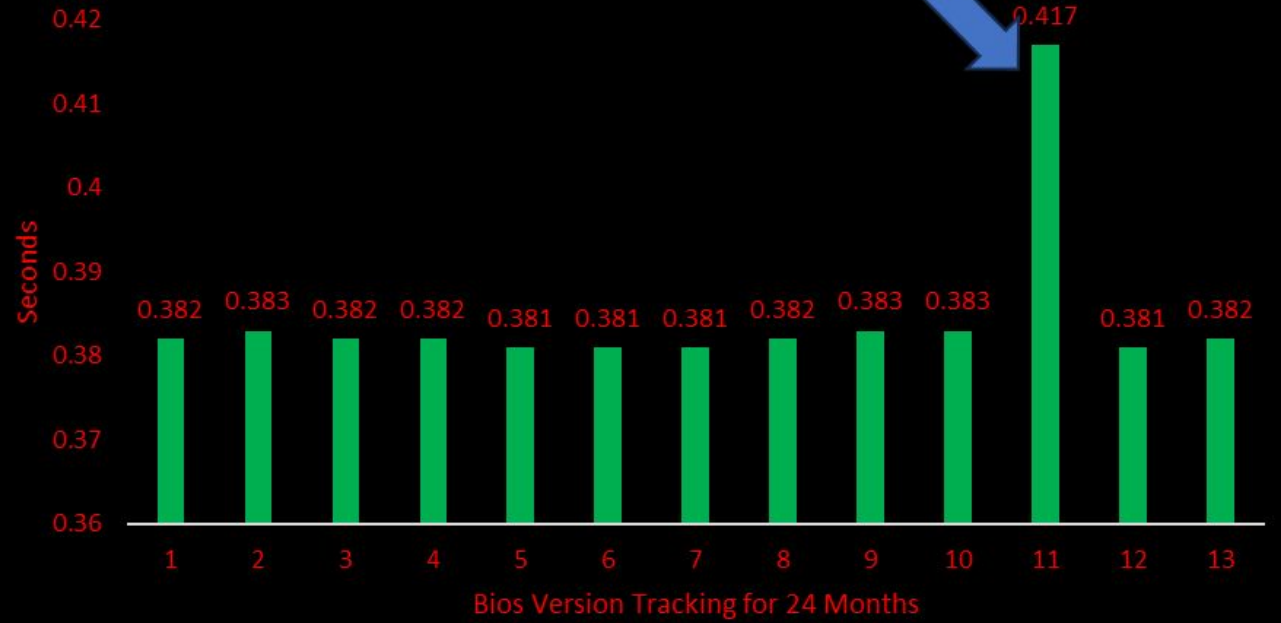
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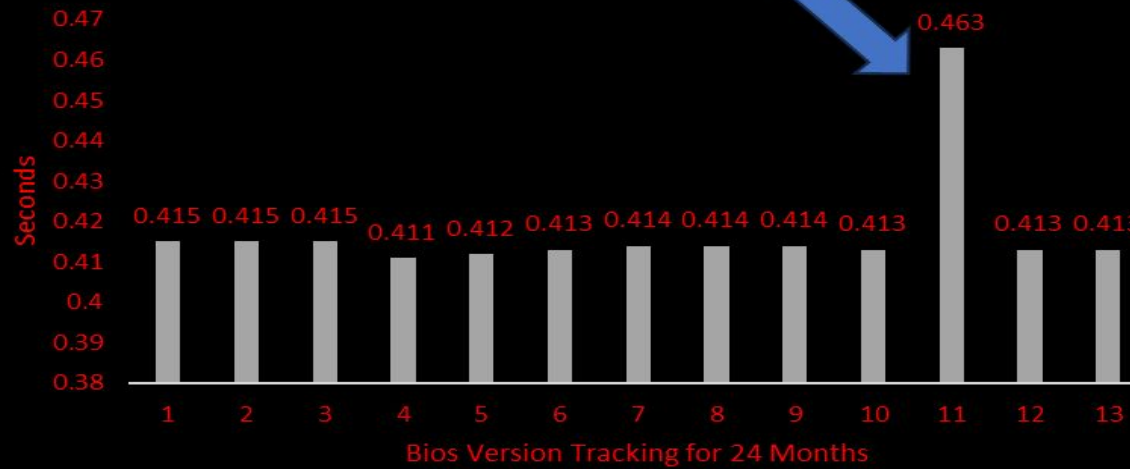
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Avoid False Positives / Bad Results

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Keep a Critical Eye on the Output

Have some familiarity with the benchmarks and the output

This part of the test looks OK

This part does not look OK

When in doubt… test again!

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Know When to Stop

When you have your results… Stop!

Don't overanalyze!

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The End!

Thank you!

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