

MILLISECONDS MATTER
IN VIRTUAL PRODUCTION

Aximmetry



MS OF TIME SAVED ON I/O MEANS TIME ADDED FOR 3D RENDERING

There are two types of latency in virtual production workflows

1. Glass to Glass (G2G) Latency

The time measured using matching burnt in time code it takes to;

- i. Capture a frame from a camera/router into an Unreal Engine server via the video card, and
- ii. Play out the 3D composited frame from the video card to an external monitor.

G2G is a round trip measurement of latency taking multiple frames, usually 3-5.

2. Milliseconds (MS) of Processing “Time Saved” Latency

MS of processing “time saved” latency is sub-frame, meaning less than a whole frame. It will be measured in MS and as a percentage of a whole frame during the I/O process.

The “time saved” by the card’s DMA I/O translates to “time added” for rendering by the 3D engine. The benefits of extra “time added” for 3D rendering are

- i. more system stability, less dropped frames chance during fixed I/O latency, and
- ii. more complex 3D graphics than was otherwise possible

G2G Latency is no Indicator of MS of Processing “Time Saved” Latency

In many cases the G2G latency between video card manufacturers will be equal. An equal G2G latency does not measure the sub-frame benefit of MS of processing “time saved” latency.

What separates a video card manufacturer’s latency performance when the G2G latency is equal, is the efficiency of their DMA engine to generate MS of “time saved” during I/O for extra “time added” during 3D rendering.

Bluefish444’s Asynchronous Full Duplex DMA I/O Engine generates the most MS of “Time Saved” Latency

Bluefish’s Windows driver V6.6.1.04 released in October 2025 included a major update to our full duplex DMA I/O engine, vastly improving the MS of “time saved” during I/O to generate “time added” for rendering by the Unreal Engine.

Gabor Puh, Head of Development, 

1st December 2025

"With the 6.6.1 driver, the measured input latency on a KRONOS K8 card became significantly smaller. The original latency was already small, but with the new version, it was stunningly low. Since this allows Aximmetry to spend more time on rendering, this increases the overall stability with fixed input-output latency."