Maximizing Network Value

Intel® Ethernet E830 Network Adapter Efficiency and Timing Capabilities

Clock Stability Under Network Load

Intel® Ethernet E830 Network Adapter E830-XXVDA2 Outperforms Comparable Tested Adapters with Lower Clock Jitter

Degradation of Clock Synchronization Under Network Load

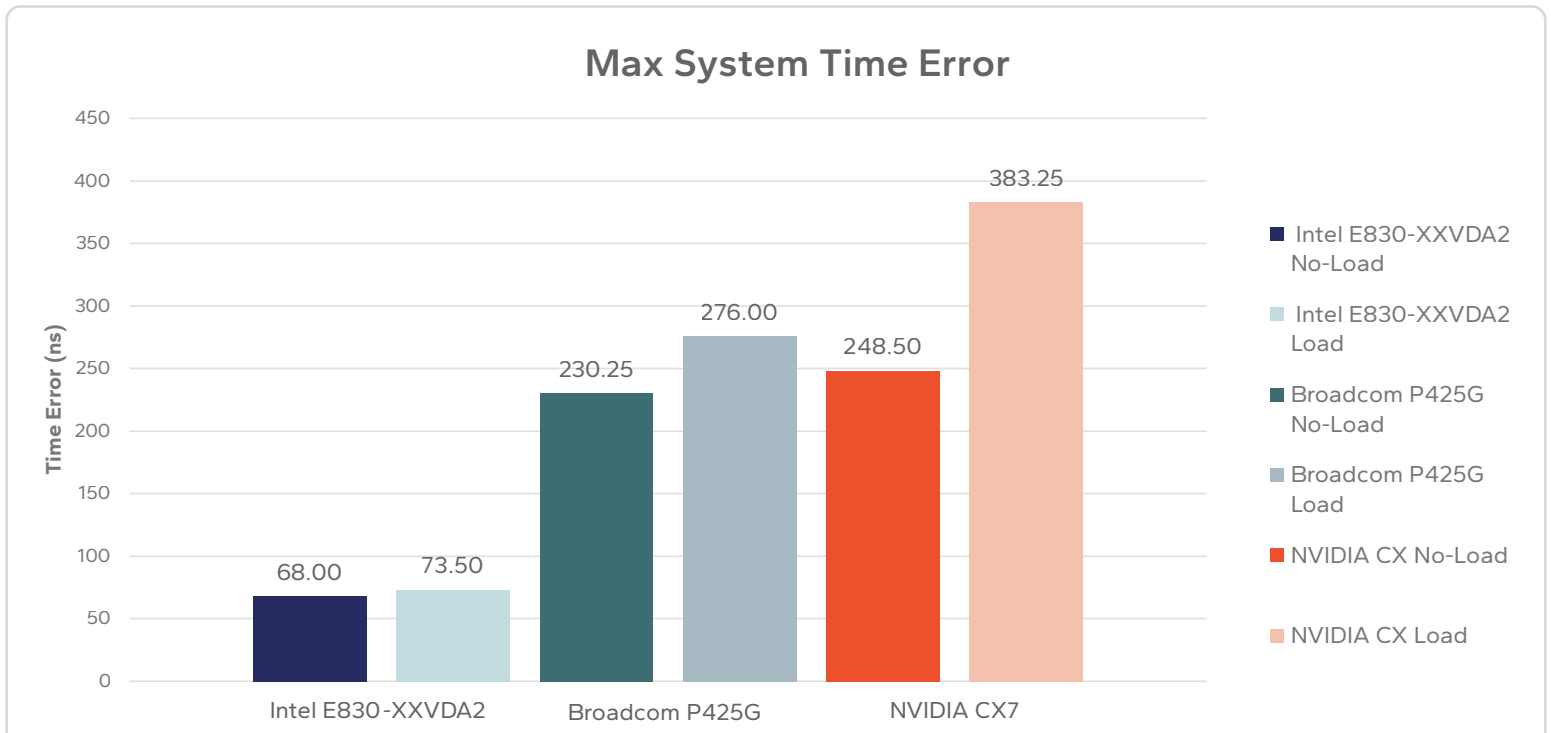
Adapter	Jitter Increase
Intel® E830-XXVDA2	**4.1%**
NVIDIA® CX7	43.4%
Broadcom® P425G	154.7%

Under congested conditions, the E830-XXVDA2 showed minimal change in jitter, indicating more consistent timing behavior compared to other tested adapters.

Low, Predictable Time Error

Mean Time Error and Outliers Remain Tightly Bounded

Peak-to-Peak System Time Error



Peak-to-peak error analysis showed tighter timing bounds for the Intel E830-XXVDA2, while other adapters exhibited wider error ranges and larger outliers, particularly under load.

Platform-Level Timing, Not Just a Network Adapter

Hardware-assisted Time Delivery Across the System

Achieving precise timing requires more than accurate packet timestamps., but system-wide support using hardware-assisted mechanisms that reduce software-induced variability.

Intel Timing & Data Path Technologies

- **Precision Time Protocol Hardware (PTP) Timestamping** – Nanosecond-level packet timing
- **Precision Time Measurement (PTM)** – Hardware-based cross-timestamping between network adapter and CPU
- **Time-Aware GPIO (TGPIO)** – Import/export of PTP synchronized system time
- **Intel® Data Direct I/O (Intel® DDIO)** – Lower-latency data movement to CPU cache

Leveraging Power Efficiency and High Port Counts for Lower TCO

With the 8-port DSFF OCP 3.0 option, the Intel Ethernet E830 family increases I/O density to drive down CapEx by minimizing required hardware and cabling. This, paired with leading power efficiency that reduces OpEx via lower power and cooling costs, results in an improved TCO for modern data centers and enterprise networks.

Why It Matters

- **Fewer adapters per system**
- **Preserves PCIe slots for GPUs or storage**
- **Lower system-level complexity in dense designs**
- **Leading estimated power per port (1.94 W) of the adapters in our analysis**

Hands-on tested by Signal65.
For more information, see the full report on the Signal65 website.

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