IGEL System Performance Review

IGEL OS 12.9.0+3 versus IGEL OS 12.10.0 on the same M350C endpoint

System	ITC00E0C52A6A64
Test duration	200 seconds per capture
Comparison date	July 31, 2026
Primary question	Is IGEL OS 12.10.0 better for browser workloads?

Overall finding: IGEL OS 12.10.0 is the better candidate for this browser workload. It delivered substantially lower I/O wait, disk utilization, disk latency, swap occupancy, and aggregate browser CPU consumption. CPU idle remained essentially unchanged, so the improvement is primarily reduced system and storage overhead rather than increased unused CPU capacity.

Executive summary

Both archives were collected from the same IGEL Technology M350C with the same AMD Ryzen Embedded R1505G processor, 4 GB installed DDR4 memory, eMMC storage, and BIOS revision. This controls for hardware differences. The operating system changed from IGEL OS 12.9.0+3 with kernel 6.18.6 to IGEL OS 12.10.0 with kernel 6.18.35.

Indicator	12.9.0+3	12.10.0	Change / interpretation
Average I/O wait	6.28%	1.57%	75% lower - major improvement
Average disk utilization	22.1%	11.5%	48% lower
Average read latency	3.54 ms	1.41 ms	60% lower
Average write latency	10.13 ms	4.08 ms	60% lower
Swap used at capture start	993Mi	48Mi	Approximately 95% lower occupancy
Aggregate browser CPU	277.7%	181.3%	35% lower; process mix differed
Average CPU idle	14.98%	15.34%	Essentially unchanged

System and platform summary

Category	IGEL OS 12.9 capture	IGEL OS 12.10 capture
OS NAME	IGEL OS 12	IGEL OS 12
OS VERSION	12.9.0+3	12.10.0
Kernel	6.18.6	6.18.35
Manufacturer / model	IGEL Technology GmbH / M350C	IGEL Technology GmbH / M350C
Processor	AMD Ryzen Embedded R1505G with Radeon Vega Gfx	AMD Ryzen Embedded R1505G with Radeon Vega Gfx
CPU topology	2 cores / 4 threads	2 cores / 4 threads
Installed memory (DMI)	4 GB: 2 x 2 GB DDR4-2400 SODIMM	4 GB: 2 x 2 GB DDR4-2400 SODIMM
Usable memory (free -h)	3.2Gi	3.2Gi
Available memory at start	1.7Gi	1.4Gi
Swap total / used	1.9Gi / 993Mi	1.9Gi / 48Mi
Storage	7.3 GB eMMC, /dev/mmcblk0	7.3 GB eMMC, /dev/mmcblk0
BIOS	INSYDE Corp. M350C V:3.2.13-10012019 (10/01/2019)	INSYDE Corp. M350C V:3.2.13-10012019 (10/01/2019)
Collection time	2026-07-31T07:33:57-06:00	2026-07-31T15:24:55-06:00

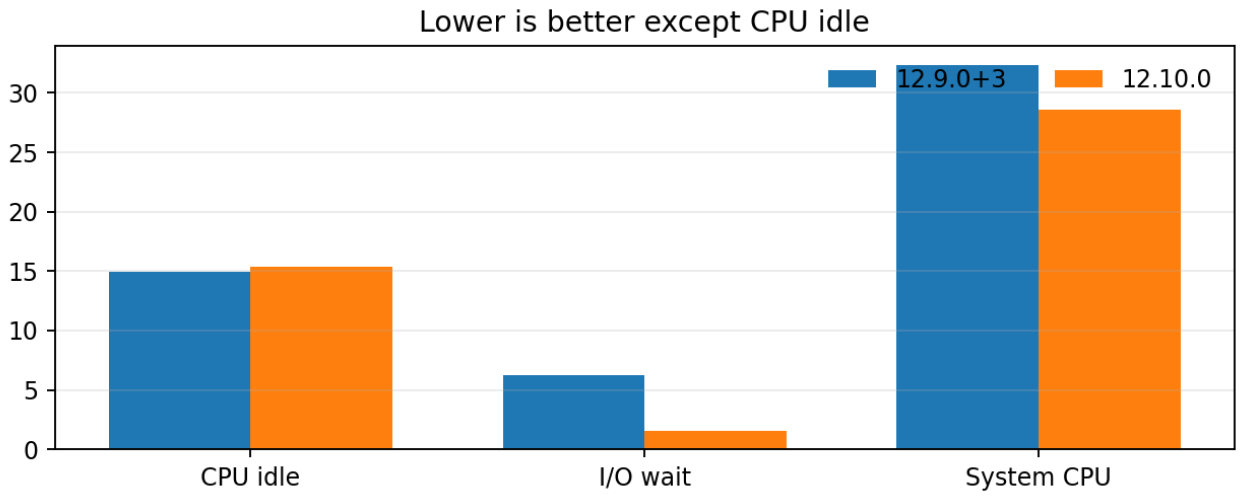
Hardware observations

The M350C is a resource-constrained endpoint for modern multi-process browsers: two physical CPU cores, four threads, approximately 3.2 GiB usable RAM, and eMMC storage. Browser responsiveness will therefore be sensitive to memory reclamation, swap behavior, renderer count, background WebKit processes, and storage latency. The hardware remained constant, so the comparison primarily reflects OS/kernel/browser-package state and workload differences.

Performance comparison

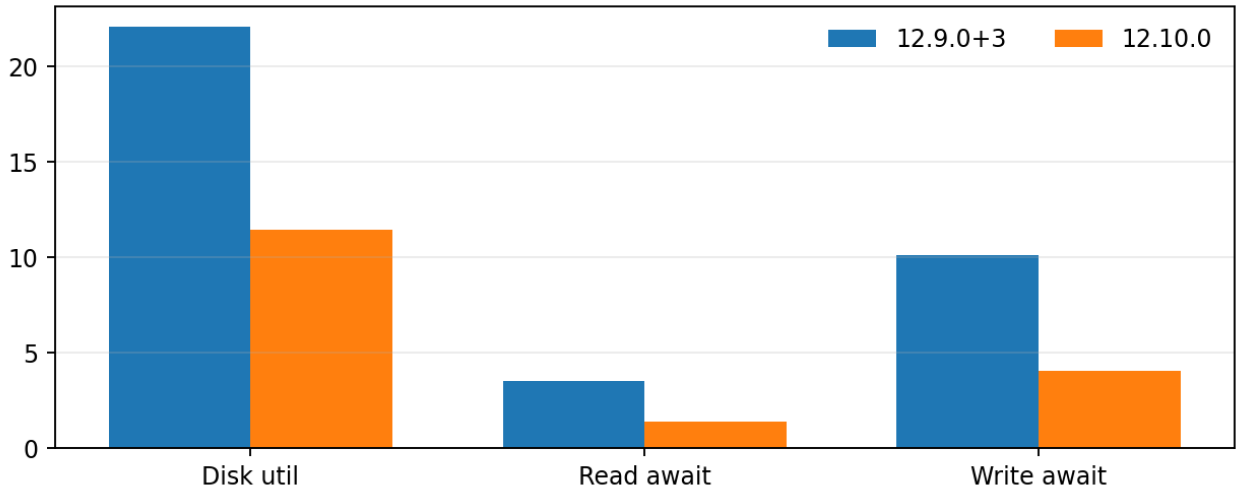
CPU and scheduling

12.10.0 shifted work from system CPU to user CPU: system time decreased from 32.31% to 28.59%, while user CPU increased from 46.18% to 54.08%. Overall idle capacity remained nearly identical (14.98% versus 15.34%). This suggests the newer release did not create more headroom, but it reduced kernel/storage overhead while doing a similar amount of useful browser work.



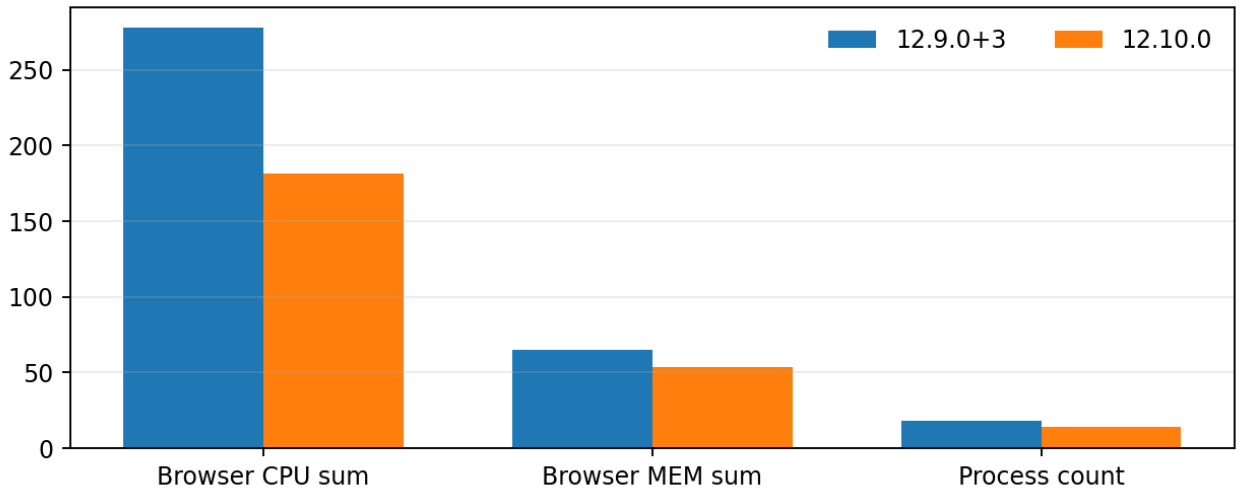
Storage and memory pressure

The clearest gain is storage behavior. Average I/O wait fell from 6.28% to 1.57%. Average eMMC utilization fell from 22.1% to 11.5%, read latency fell from 3.54 ms to 1.41 ms, and write latency fell from 10.13 ms to 4.08 ms. Lower blocked-process counts and lower average block I/O reinforce the finding.



Browser workload findings

The process snapshots show Microsoft Edge activity in both captures alongside WebKit/WPE background processes. Aggregate Edge/Chromium-family CPU averaged 277.7% in 12.9.0+3 and 181.3% in 12.10.0, a reduction of about 35%. Aggregate browser memory was also lower on average (65.3% versus 53.6% of RAM), although the 12.10.0 capture reached a higher single-snapshot peak and started with more resident memory in use.



Question	Assessment
Is 12.10.0 better for browser workloads?	**Yes, based on this dataset.** It is more storage-efficient and shows lower aggregate browser CPU demand.
Confidence	**Moderate.** Same hardware and duration are strong controls, but browser process counts and memory state were not identical.
Primary benefit	Reduced eMMC contention and swap-related pressure, which should improve page-load consistency and interactive responsiveness.
Remaining constraint	The 2-core/4-thread CPU and 4 GB installed RAM remain the limiting factors under heavy multi-tab or multi-browser use.

Important test limitation

This is an observational comparison, not a controlled browser benchmark. The 12.9 capture averaged more browser processes, and the starting memory/swap state differed materially. Therefore, the data supports deployment preference for 12.10.0, but it does not prove a fixed percentage improvement in page rendering or JavaScript execution. A repeat test should use the same browser version, URLs, tab count, cache state, extensions, login state, and scripted interaction sequence.

Recommended validation

Repeat each release at least three times after a clean reboot. Record time-to-first-content, page load completion, tab-switch latency, video playback frame drops, browser crash or OOM events, and 95th-percentile CPU/I/O wait. Keep the Edge build and profile identical. On this 4 GB platform, also test a realistic worst case with multiple tabs and one video or collaboration workload.

Detailed metric table

Metric	12.9.0+3	12.10.0	Preferred
CPU user	46.18%	54.08%	Context dependent
CPU system	32.31%	28.59%	12.10
CPU I/O wait	6.28%	1.57%	12.10
CPU idle	14.98%	15.34%	Tie
Run queue average	7.33	8.69	12.9
Blocked processes average	0.86	0.48	12.10
Swap-in average	6216 KiB/s	3501 KiB/s	12.10
Swap-out average	12889 KiB/s	11989 KiB/s	12.10
Disk reads average	351.5/s	205.7/s	12.10
Disk read throughput	8659 KiB/s	5747 KiB/s	12.10
Disk read await	3.54 ms	1.41 ms	12.10
Disk write await	10.13 ms	4.08 ms	12.10
Disk queue depth	1.52	0.54	12.10
Disk utilization	22.1%	11.5%	12.10
Browser process count avg	18.2	14.1	Not normalized
Browser CPU sum avg	277.7%	181.3%	12.10
Browser memory sum avg	65.3%	53.6%	12.10

Source files

performance-ITC00E0C52A6A64-20260731-073357.tar(5).gz and performance-ITC00E0C52A6A64-20260731-152455.tar(2).gz. Metrics were derived from system-info.txt, mpstat.txt, vmstat.txt, iostat.txt, pidstat.txt, and processes.txt in each archive.