

powerserver®

Performance Benchmark

Load Time Comparison: Version 6.0 vs Version 6.7

1. Key Findings Summary

The following table summarises the headline performance improvements achieved in v6.7 compared to v6.0 across all tested scenarios.

Metric	Result
Best first image render improvement	CR: 67% faster
Best DBT / 3D improvement	MG DBT: 57% faster
Average first image render improvement	~39% faster across all modalities
Best full study caching improvement	80% faster
Best high-res frames improvement	67% faster
Scrolling improvement	MG Tomo cine: 4x faster
Average CT scrolling improvement	~42% faster across input methods

[Contact us to learn more](#)

Available for solutions hosted on Azure.

2. First Image Render Times

The table below shows the time from study open to first image appearing in the viewport, measured in an uncached state on the same hardware. All times are in seconds.

Modality	Description	Improvement
MG	Mammography 2D	25%
MG DBT	3D Digital Breast Tomosynthesis	57%
CT	Computed Tomography	40%
MR	Magnetic Resonance Imaging	20%
CR	Computed Radiography / X-Ray 1	67%
CR	Computed Radiography / X-Ray 2 (CXR 2V)	33%
US	US with 50 images	0%
US	US with 50 images (All thumbnails load)	71%
CT	High frame (3k) count CT	0%
CT	High frame (3k) count CT (All thumbnails load)	20%
PET	Computed Tomography & PET	50%

Note: Times reflect representative measurements from comparable test runs. Results may vary slightly across network conditions and study sizes.

3. Full Study Load Times

The following scenarios were tested to evaluate performance when loading complete studies, including large frame counts and high-resolution images.

Scenario	Scenario Study Detail	Improvement
Large # of Frames – Study Caching	MR · 2,000 images	80%
Few High-Resolution Frames	CR High-res study	67%
	MG 2D Study	25%
	MG DBT Study	~60%
	Enhanced CT	~0%
Multi-frame normal frame count	696 images (5 series)	40%
	CT High frame count	60%

Note: The MR 2,000-image study represents the most dramatic improvement, reducing full cache time by 80% from 1 minute 29 seconds to 18 seconds.

4. Scrolling Performance Comparison

Two modalities were tested – MG Tomo (62 slices) and CT (347 images) – across three input methods: keyboard, mouse wheel, and cine playback. FPS was calculated as total images divided by elapsed time in seconds.

MG Tomo (62 slices)

Method	Improvement
Keyboard	100% (2x)
Mouse wheel	275% (3.75x)
Cine playback	300% (4x)

CT (347 images)

Method	Improvement
Keyboard	33% (1.33x)
Mouse wheel	42% (1.42x)
Cine playback	50% (1.5x)

Key observations from this data:

MG Tomo scrolling shows the largest gains, with mouse wheel and cine playback reaching approximately **3.75x-4x the throughput of v6.0**. This aligns with the HTJ2K compression benefits noted elsewhere in the document for tomographic datasets.

CT scrolling improvements range from **33% to 50%**, with cine playback showing the largest gain.

5. Observations & Notes

5.1 Improvements Driven by v6.7 Architecture

- HTJ2K compression significantly reduces data transfer overhead, particularly benefiting large studies and high-resolution modalities such as MG DBT.
- Remote rendering offloads processing from the client, resulting in faster first image display even on constrained hardware.
- CR (Chest X-Ray) shows the largest first-render improvement at 67%, reflecting efficient transfer of smaller, high-contrast images under HTJ2K.
- MG DBT shows the second largest improvement at 57%, reflecting the high benefit of server-side rendering for volumetric 3D datasets.

5.2 Caching Behaviour

- Full study caching in v6.7 is dramatically faster for large frame-count studies. The MR 2,000-image study dropped from 1m 29s to 18s, an 80% reduction.
- After initial caching, subsequent loads in v6.7 are near-instantaneous, providing a strong user experience for repeat study access.

7. Test Methodology

7.1 Test Configuration

All tests were conducted under the following controlled conditions to ensure fair and accurate comparisons between PowerServer v6.0 and v6.7:

Version-Specific Settings

- ▶ v6.7: Remote rendering enabled
- ▶ v6.7: HTJ2K scroll Tomos 4x faster (High Throughput JPEG 2000) compressed images
- ▶ v6.7: Latest available patch applied
- ▶ v6.0: JPEG Lossless or JPEG 2000 lossless compression

7.2 Test Conditions

- ▶ All tests performed on the same hardware to eliminate hardware variability
- ▶ All tests performed in an uncached (cold-start) state
- ▶ Timing captured via screen recording for accuracy
- ▶ Results measured by replaying recordings frame-by-frame

7.3 Modalities Tested

- ▶ MG – Mammography 2D
- ▶ MG DBT – 3D Digital Breast Tomosynthesis
- ▶ CT – Computed Tomography
- ▶ MR – Magnetic Resonance Imaging
- ▶ CR – Computed Radiography (Chest X-Ray)

7.4 Metrics Captured

- ▶ First image render time – time from study open to first image visible in viewport
- ▶ Full study cache time – time for all frames/series to fully cache

8. Test Environment

Tests were conducted by multiple testers across two rounds (pre-patch and post-patch). Representative hardware configuration:

CPU:	Intel Core i7-9750H @ 2.60GHz
RAM:	32 GB
Graphics Card:	4 GB VRAM
OS:	Windows 11 / Windows 11 Enterprise
v6.0 endpoint:	qarispace.ramsoft.biz
v6.7 endpoint:	demo.ramsoftpacs.com (post-patch)