



Diagnostic Workstation

*Softcopy reading station for the G4PACS
Picture Archiving and Communication
System*

PRODUCT DATA SHEET

Document No. G4-DS-WS-040

Revision 4.00, 09/17/2026

Software version 4.0

1. SCOPE

This data sheet lists the technical specifications of the G4PACS Diagnostic Workstation software, version 4.0: supported platforms, display requirements, network protocols and standards, DICOM object support, image processing and measurement functions, integration interfaces, security controls and measured performance. Operating instructions are in the *Workstation User Guide* (G4-UG-WS-040).

2. PLATFORM REQUIREMENTS

2.1 Hardware

Component	Minimum	Recommended	Remarks
Processor	8 cores, 3.0 GHz, x86-64 with AVX2	12 cores, 3.5 GHz or faster	ARM64 not supported
Memory	32 GB	64 GB	1 GB per 1,000 CT slices in the reading session
Graphics	8 GB VRAM, Vulkan 1.3, OpenGL 4.6	16 GB VRAM, NVIDIA RTX A-series or equivalent	Decoding, rendering and volume rendering on GPU
Storage	1 TB NVMe SSD	2 TB NVMe SSD	Local cache of prefetched studies; encrypted
Network	1 Gbit/s Ethernet	10 Gbit/s Ethernet	Wireless not supported for diagnostic reading
Display outputs	2 x DisplayPort 1.4	3 x DisplayPort 1.4 or 2.0	10-bit per channel required for greyscale displays
Input	Keyboard, 3-button wheel mouse	Programmable keypad	All functions keyboard-accessible

2.2 Operating systems

Operating system	Editions / versions	Packaging
Microsoft Windows 11	Pro, Enterprise; 23H2 or later, 64-bit	MSI package; silent install; Group Policy templates
Ubuntu Linux	24.04 LTS, 64-bit, X11 or Wayland	DEB package; signed APT repository
Virtual desktop	Windows 11 on VMware Horizon or Citrix, GPU pass-through	Non-mammography reading only

3. DISPLAY REQUIREMENTS

Reading task	Displays	Resolution	Luminance	Calibration
General radiography, CT, MR, US, NM, PET	2 x greyscale or colour medical-grade	3 MP (1536 x 2048) each	≥ 400 cd/m ² calibrated; ≥ 1,000 cd/m ² max.	DICOM PS3.14 GSDF
Mammography, tomosynthesis	2 x greyscale medical-grade	5 MP (2048 x 2560) each	≥ 500 cd/m ² calibrated; ≥ 1,000 cd/m ² max.	DICOM PS3.14 GSDF; QC per local regulation
Pathology whole-slide	1 x colour medical-grade	≥ 4 MP, sRGB / DCI-P3	≥ 300 cd/m ²	Colour, sRGB
Navigation, worklist	1 x colour	≥ 1920 x 1080	n/a	n/a

- Greyscale pipeline: 12-bit pixel data, 10-bit output, GSDF look-up applied in the GPU; no dithering of diagnostic pixels.

- Calibration state read over DDC/CI where supported. Diagnostic reading is refused on a display whose calibration is expired or unknown unless overridden by an administrator.
- Supported display QC systems: Barco QAWeb, EIZO RadiCS, generic DDC/CI.

4. NETWORK PROTOCOLS AND STANDARDS

4.1 DICOM network services

Service	Role	SOP Class / information model	Remarks
Verification	SCU, SCP	Verification SOP Class	Connectivity checks
Storage	SCU, SCP	All Storage SOP Classes of section 5	SCP for C-MOVE responses and modality push
Query	SCU	Patient Root, Study Root Q/R Information Model – FIND	Patient, Study, Series, Image levels; no relational queries
Retrieve	SCU	Patient Root, Study Root Q/R Information Model – MOVE, GET	C-GET preferred through firewalls
Modality Worklist	SCU	Modality Worklist Information Model – FIND	Technologist and QC workflows
Storage Commitment	SCU	Storage Commitment Push Model	Key images, presentation states, SR
Print	SCU	Basic Grayscale / Color Print Management Meta	Optional; DICOM print servers

4.2 DICOMweb

Service	Operations	Remarks
QIDO-RS	Search studies, series, instances; includefield; fuzzy matching	application/dicom+json
WADO-RS	Retrieve study, series, instance, frames, metadata, bulk data, rendered	application/dicom, image/jpeg, image/jp2, application/octet-stream; transfer syntax via Accept
STOW-RS	Store instances	Key images, GSPS and SR to DICOMweb-only archives
WADO-URI	Retrieve instance	Legacy; third-party archives

4.3 Health information exchange

Standard	Messages / resources	Direction	Use
HL7 v2.5.1	ORU^R01	Outbound	Measurements to the RIS when reporting from the workstation
HL7 v2.5.1	ADT^A08, ORM^O01	Inbound (via archive)	Patient updates, order status for the worklist
HL7 FHIR R4	ImagingStudy, Patient, DiagnosticReport, ServiceRequest	Read; DiagnosticReport write	Context, priors, report status from the EHR
IHE	SWF, PIR, IOCM, KIN, CPI, BIR, XDS-I.b (Imaging Document Consumer), ATNA	–	See IHE Integration Statement

4.4 Transport, ports and encryption

Interface	Protocol	Default port	Encryption
DICOM	TCP	11112 (configurable)	DICOM TLS: TLS 1.3, AES-256-GCM; client certificates
DICOMweb, FHIR, configuration, updates	HTTPS	443	TLS 1.3; TLS 1.2 fallback configurable; HSTS
Single sign-on	HTTPS	443	SAML 2.0 (HTTP-POST) or OpenID Connect (authorization code, PKCE)
Audit	Syslog	6514 (TLS) / 514	IHE ATNA, RFC 5424; DICOM PS3.15 audit schema
Display QC	DDC/CI	n/a	n/a

NOTE: Inbound connections are accepted only on the DICOM SCP port and the loopback control API. All other listeners are disabled.

5. DICOM OBJECT SUPPORT

5.1 Displayed SOP Classes

Modality / object	SOP Classes	Rendering
CT, Enhanced CT	CT Image; Enhanced CT Image	2D, MPR, MIP, MinIP, volume rendering; HU calibrated
MR, Enhanced MR	MR Image; Enhanced MR Image; Enhanced MR Color; MR Spectroscopy (metadata)	2D, MPR, MIP; diffusion/perfusion series recognised
Radiography	Computed Radiography; Digital X-Ray (Presentation, Processing); Digital Intra-Oral	2D with VOI LUT, PS3.14 rendering
Mammography	Digital Mammography X-Ray (Presentation, Processing); Breast Tomosynthesis	2D, tomosynthesis cine and slab, CAD SR overlay
Ultrasound	Ultrasound Image; Ultrasound Multi-frame; Enhanced US Volume	2D, cine, region-calibrated measurements
Nuclear medicine, PET	Nuclear Medicine Image; PET Image; Enhanced PET	2D, MIP, fusion, SUV (BW, LBM, BSA)
Angiography, fluoroscopy	X-Ray Angiographic; X-Ray RF; Enhanced XA; Enhanced XRF; X-Ray 3D Angiographic	Cine, subtraction, 3D
Secondary capture, VL, video	Secondary Capture (all); VL Endoscopic, Microscopic, Photographic; Video (all); Whole Slide Microscopy	2D, video playback, tiled pyramid viewer
Presentation, key objects	Grayscale, Color, Pseudo-Color, Blending Softcopy Presentation State; Key Object Selection	Applied on load; created by the workstation
Reports, documents	Basic Text, Enhanced, Comprehensive SR; Mammography, Chest, Colon CAD SR; X-Ray Radiation Dose SR; Encapsulated PDF, CDA	SR tree; CAD marks as overlays; PDF/CDA inline
Segmentation, registration	Segmentation; Surface Segmentation; Spatial Registration; Deformable Spatial Registration	Overlay, 3D surfaces, registered display
Radiotherapy	RT Structure Set; RT Dose; RT Plan; RT Image	Contours and dose overlay; no planning

5.2 Transfer syntaxes decoded

Family	Transfer syntaxes	Decoder
Uncompressed	Implicit VR LE, Explicit VR LE, Explicit VR BE (retired), Deflated Explicit VR LE	CPU
JPEG	Baseline (Process 1), Extended (2 & 4), Lossless (14), Lossless SV1 (14, SV1)	GPU, CPU fallback
JPEG-LS	Lossless, Lossy (Near-Lossless)	CPU, multi-threaded
JPEG 2000	Lossless Only, Lossy; Part 2 Multi-component (both)	GPU, CPU fallback; progressive for WADO-RS
RLE	RLE Lossless	CPU
Video	MPEG2 MP@ML, MPEG2 MP@HL, MPEG-4 AVC/H.264, HEVC/H.265	Hardware decoder where available

5.3 Objects created

- Grayscale Softcopy Presentation State: annotations, window/level, zoom, rotation, shutters, displayed area.
- Key Object Selection Document: key images with document titles from CID 7010.
- Comprehensive SR: measurements per TID 1500 Measurement Report; TID 4000 for CAD reviews.
- Secondary Capture Image: screen captures with burned-in annotations, for referral only.
- All created objects carry the workstation Implementation Class UID and are sent with Storage Commitment.

6. IMAGE PROCESSING AND MEASUREMENT

6.1 Display and reconstruction

Function	Specification
Window / level	Per image and per series; VOI LUT sequences honoured; presets per modality and body part; sigmoid and linear-exact
Zoom and pan	0.1x to 64x; true size from Imager Pixel Spacing and display DPI; magnifier 2x to 8x
Multi-planar reconstruction	Orthogonal, oblique, curved; slab 0 to 100 mm; MIP, MinIP, average; real time on GPU
Volume rendering	GPU ray casting; transfer function presets; clipping planes; 4K viewport at ≥ 30 frames/s on the recommended GPU
Fusion	PET/CT, PET/MR, SPECT/CT; blend 0 to 100%; colour maps; frame of reference or registration object
Synchronisation	By frame of reference, slice position, series; cross-reference lines; linked scrolling across studies
Cine	1 to 120 frames/s; frame range; bounce; multi-viewport synchronous playback
Priors	Automatic prefetch by hanging protocol rules (body part, modality, age); side-by-side, stacked, subtraction

6.2 Measurements

Measurement	Units and method	Precision
Distance, polyline, angle, Cobb angle	mm, degrees; Pixel Spacing or Imager Pixel Spacing; calibration by known length	0.1 mm, 0.1°
Region of interest (ellipse, rectangle, freehand)	Area mm ² ; mean, SD, min, max in HU, SUV or pixel value	0.1 HU, 0.01 SUV
Volume	mm ³ from segmented region across slices; ellipsoid from three diameters	1 mm ³
SUV	Body weight, lean body mass (Janmahasatian), body surface area (DuBois); decay corrected	0.01
CTR, spinal labelling, TI-RADS, BI-RADS, Lung-RADS	Guided workflows producing coded SR content	—
Calibration	Manual, with reference object; stored in GSPS	—

All measurements are stored as Comprehensive SR (TID 1500) with SNOMED CT and DICOM coded concepts and can be exported as JSON or CSV through the control API.

7. WORKLIST AND HANGING PROTOCOLS

- Worklist sources: archive index (DICOM Q/R or QIDO-RS), RIS/EHR order status (HL7 or FHIR), AI result priority (DICOM SR or FHIR Task).
- Filters: modality, body part, priority, referring unit, age of exam, reading status, assigned radiologist; saved views per user and group.
- Hanging protocols: DICOM Hanging Protocol objects (PS3.4 Annex U) plus a rule engine keyed on modality, body part, laterality, priors, display count and resolution.
- Layouts up to 6 x 6 viewports per display across up to 4 displays; mammography quad and CC/MLO protocols supplied.

8. INTEGRATION INTERFACES

Interface	Specification
Context launch	URL scheme g4pacs://open?studyUID=...&accession;=...&user;=...; HTTP POST to the local control port; context lock by the RIS
Control API	Local REST API (HTTPS, loopback); open, close, layout, navigate, measurement export, status; OpenAPI 3.1 description supplied
Reporting	Report status and measurement SR to RIS by HL7 ORU or FHIR DiagnosticReport; dictation systems via the control API
AI results	DICOM SR (TID 1500, TID 4100), Segmentation and GSPS from AI services as overlays; FHIR Task priority in the worklist
Configuration	Central configuration from the archive over HTTPS; site, group and user layers; signed configuration bundles
Software updates	Signed packages from the archive or a local mirror; staged roll-out by group; rollback

9. SECURITY

Control	Specification
Authentication	SAML 2.0 or OpenID Connect single sign-on; smart card and FIDO2 via the identity provider; local accounts for emergency use only
Authorisation	Role-based (radiologist, resident, technologist, administrator, referring); site and modality scopes; break-glass with mandatory reason
Session	Inactivity lock (default 10 min); diagnostic displays blanked on lock
Data at rest	Local cache AES-256 (BitLocker or LUKS, managed by the installer); cache purged on log-out by policy
Data in transit	TLS 1.3 on all interfaces; DICOM TLS with mutual authentication; optional certificate pinning
Audit	IHE ATNA messages (PS3.15) for log-in, study access, export, print, configuration; local buffer when the audit server is unreachable
Hardening	Signed binaries; SBOM supplied with each release; no inbound ports except DICOM SCP and loopback control API

10. PERFORMANCE

Measured on the recommended configuration (12-core CPU, 64 GB RAM, 16 GB GPU, NVMe cache, 10 Gbit/s network) against a G4PACS Archive on the same site. Median of 100 runs.

Operation	Result
Open a 2,000-slice CT study from local cache	1.6 s to first image; 1.9 s to full navigation
Open the same study from archive tier 1 (not cached)	3.4 s to first image; background load complete in 7.8 s
Open a 4-view tomosynthesis study (2 x 60 slices, 5 MP)	2.1 s to first image
MPR reformat of a 2,000-slice CT	Interactive; ≤ 16 ms per frame
Volume rendering, 512 x 512 x 2,000	≥ 30 frames/s at 3840 x 2160
Prefetch throughput from the archive	≥ 400 MB/s sustained
Cold start to worklist	4 s

11. ORDERING INFORMATION

Part number	Description
G4-WS-DX-40	Diagnostic Workstation software licence, per seat, includes 12 months of updates and support
G4-WS-MG-40	Mammography reading option (tomosynthesis, CAD SR overlay, 5 MP display profile)
G4-WS-3D-40	Advanced visualisation option (volume rendering, registration, fusion)
G4-WS-PATH-40	Pathology whole-slide viewing option
G4-WS-KEY	Programmable keypad, USB, with G4PACS key caps
G4-SVC-WS-1Y	Annual software maintenance and support renewal, per seat

ORDERING: Licences are activated with the licence key shown in the customer portal. Contact your account manager or sales@g4pacs.com for quotations.

12. SUPPORT AND WARRANTY

- Supported releases: the current version and the previous minor version receive security fixes; older versions receive fixes for 12 months after the next release.
- Support: 24 x 7 hotline for critical issues; remote diagnostics through the encrypted support channel; www.g4pacs.com/support.html.
- Software is warranted to perform substantially as described in this data sheet for the term of the subscription.

APPENDIX A. ABBREVIATIONS

Term	Meaning
ATNA	Audit Trail and Node Authentication (IHE)
BSA	Body surface area
CAD	Computer-aided detection
GSDF	Grayscale Standard Display Function (DICOM PS3.14)
GSPS	Grayscale Softcopy Presentation State
HU	Hounsfield unit
KOS	Key Object Selection document
MIP / MinIP	Maximum / minimum intensity projection
MPR	Multi-planar reconstruction
PKCE	Proof Key for Code Exchange
SBOM	Software bill of materials
SR	Structured Report
SUV	Standardised uptake value
TID	Template identifier (DICOM PS3.16)
VOI	Value of interest
WSI	Whole-slide imaging

APPENDIX B. DOCUMENT HISTORY

Rev.	Date	Description	Author
4.00	09/17/2026	Version 4.0: AI-prioritised worklist; FHIR R4 resources; hybrid archive tiers; performance re-measured.	Product Engineering
3.08	03/03/2025	Version 3.8: Windows 11 and Ubuntu 24.04 baseline; Kubernetes-served configuration; STOW-RS.	Product Engineering
3.07	10/09/2023	Version 3.7: GPU volume rendering; tablet companion for the web viewer; audit export.	Product Engineering
3.06	09/12/2022	Version 3.6: Volume rendering; rigid registration; measurement export as SR.	Product Engineering
3.05	10/18/2021	Version 3.5: TLS 1.3; OpenID Connect; configurable transfer syntax preferences.	Product Engineering
3.04	11/23/2020	Version 3.4: Windows 10 baseline; 10-bit display pipeline; audit logging (ATNA).	Product Engineering
3.02	09/16/2019	Version 3.2: Whole-slide microscopy viewer; video playback; Linux build.	Product Engineering
3.01	10/08/2018	Version 3.1: Tomosynthesis cine; mammography hanging protocols; 5 MP display profile.	Product Engineering
3.00	11/13/2017	Version 3.0: Cloud archive access; TLS 1.2; single sign-on (SAML 2.0).	Product Engineering
2.03	09/26/2016	Version 2.3: PET/CT fusion; SUV measurements; RT structure set display.	Product Engineering
2.02	10/12/2015	Version 2.2: DICOMweb client (WADO-RS, QIDO-RS); context launch from RIS.	Product Engineering
2.01	05/05/2014	Version 2.1: Structured report viewing; Key Object Selection; GSPS annotations.	Product Engineering
2.00	06/17/2013	Version 2.0: MPR and MIP; enhanced multi-frame CT/MR; GPU rendering pipeline.	Product Engineering
1.02	09/10/2012	Version 1.2: JPEG 2000 decoding; dual-display support; DICOM Part 14 calibration check.	Product Engineering
1.01	11/21/2011	Version 1.1: Modality Worklist integration; hanging protocols per modality.	Product Engineering
1.00	03/14/2011	Initial release, Diagnostic Workstation 1.0 (Windows 7, single 2 MP display, 2D tools).	Product Engineering