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A Review of Challenges and Innovations in Cloud-Based Picture Archiving and Communication Systems (Cloud-PACS)

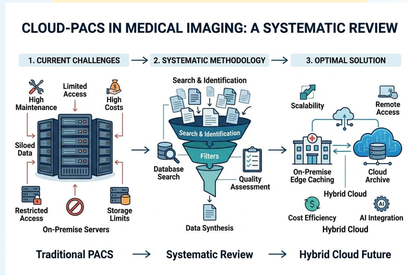




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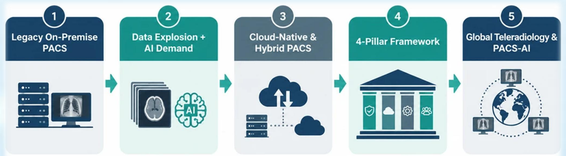
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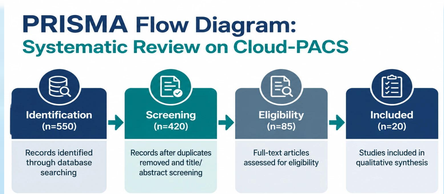


Backgrounds

- **The Problem:** Modern imaging (**CT, MRI, PET**) generates massive data that overwhelms legacy on-premise PACS, creating bottlenecks in scalability, remote accessibility, and AI integration.
- **The Shift:** Cloud-PACS offers a paradigm shift toward scalable, AI-ready, and remote-accessible infrastructure.
- **The Reality Gap:** Despite potential, wide-scale clinical adoption is hindered by **Cybersecurity risks, Network Latency, and Interoperability barriers.**
- **Study Objective:** To systematically evaluate this transition and introduce a **Four-Pillar Strategic Framework** (Clinical, Organizational, Technological, Policy) to bridge the gap between theory and real-world clinical implementation.

Methods





Findings

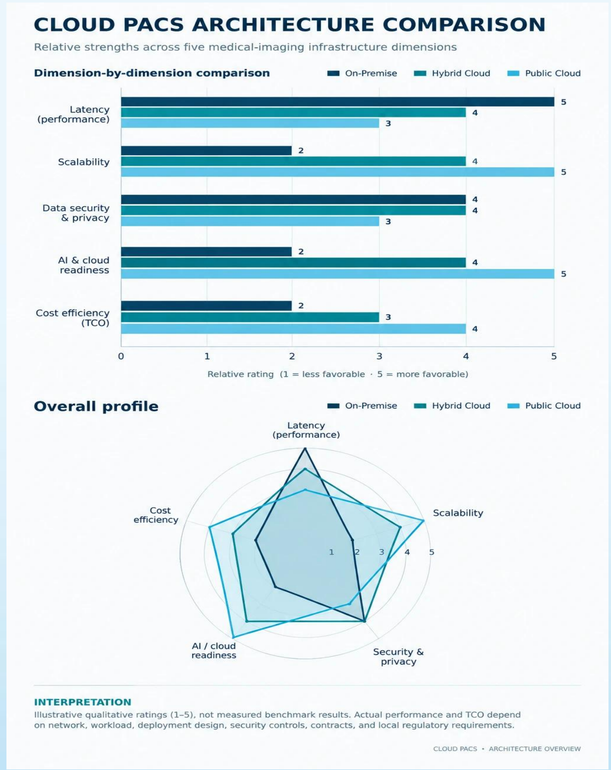
Cloud-PACS Findings

Architecture Comparison

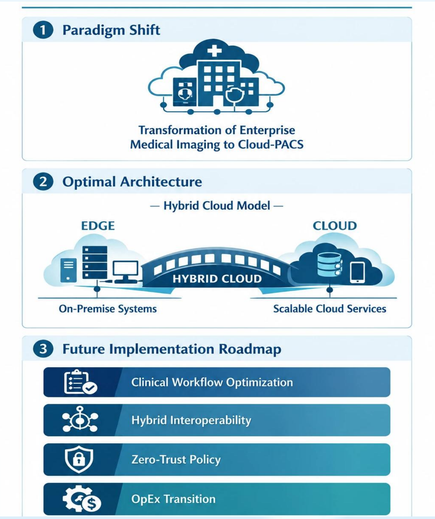
	On-Premise	Public Cloud	Hybrid Cloud
CapEx vs. OpEx	⚠ High CapEx	✓ Low OpEx	Balanced CapEx & OpEx ⚠✓
AI Readiness	⚠ Limited AI Support	✓ AI Optimized	Flexible AI Integration ✓
Latency	✓ Low Latency	⚠ Higher Latency	⚠ Variable Latency

Key Adoption Barriers

Security	Network Latency	Interoperability	Organizational/ Cost
42%	28%	18%	12%



Conclusion



References

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3. Ghaderi MR. A Review on Architectures and Applications of Medical Imaging Cloud. Cloud Computing and Data Science. 2026:99-125.