

What are the security risks of using hybrid cloud environments, and what measures can be taken to minimize these risks in the healthcare sector?

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Abstract

Hybrid cloud environments are becoming increasingly common in the healthcare sector, offering organizations the ability to combine private and public cloud systems for greater scalability, flexibility, and data management efficiency. These systems make it easier to share data and improve healthcare services. However, they also bring serious security risks, including data breaches, unauthorized access, and challenges in maintaining compliance with healthcare regulations. Because patient data is very sensitive, any security issue can have significant consequences. It is also challenging to maintain security when different systems are interconnected. Research shows common issues such as misconfigured systems, insecure APIs, and the lack of security policies across cloud platforms (Davenport Group, 2023).

The research reveals several key security risks, including inadequate data encryption, insecure APIs, and a lack of security policies across cloud environments. It also identifies successful mitigation measures, such as implementing zero-trust security models, encryption at rest and in transit, continuous threat monitoring, and compliance-focused governance frameworks.

While a hybrid cloud formula offers operational benefits, healthcare organizations still face challenges with data accessibility and privacy. The difficulty of integrating diverse systems can expose vulnerabilities if not managed properly. Ensuring robust

security requires technical controls, policy enforcement, and workforce training. This paper explains the need for healthcare providers to take a strategic approach to risk management.

References

- Davenport Group (2023). Hybrid Cloud Security Challenges and Best Practices. Retrieved from <https://davenportgroup.com/insights/hybrid-cloud-security-challenges-a>
- Biden Administration proposes new cybersecurity rules to limit impact on health-care. (2024, December 27). Reuters. Retrieved from <https://www.reuters.com/technology/cybersecurity/biden-administration-proposes-new-cybersecurity-rules-l>
- HHS opens probe into hack at UnitedHealth unit. (2024, March 13). Reuters. Retrieved from <https://www.reuters.com/technology/cybersecurity/hhs-opens-probe-into->
- US proposes rules to make healthcare data more secure. (2024, December 28). The Verge. Retrieved from <https://www.theverge.com/2024/12/28/24330878/the-us-proposes-rules-to-make-healthcare-data-more-secure>
- Arxiv (2023). Hybrid Cloud Security Analysis. Retrieved from <https://arxiv.org/abs/2312.02993>
- Github link: <https://github.com/Emilevdhenst/rm-paper>