

# High Cost of Availability in C.I.A.



Achieving availability in CIA is indeed costly due to the need for redundancy, jam resistance, and sophisticated technologies. Unlike confidentiality and integrity, which can be managed with encryption and algorithms respectively, availability requires continuous access to data. This necessitates robust infrastructure, including backup systems, and careful planning to avoid system failures. The cost escalates with different accessibility needs of workers and clients. Ensuring availability is a complex, resource-intensive task, making it the most expensive component of CIA triad

The CIA triad, encompassing Confidentiality, Integrity, and Availability, forms the cornerstone of information security. While all elements are critical, the attainment of high availability emerges as the most economically demanding facet.

## Cost-Effective Confidentiality Measures

Over the years, encryption technologies have become more accessible and cost-effective. Standardized encryption algorithms and protocols, such as AES and TLS, are widely adopted, offering robust protection against unauthorized access to sensitive information.

## Authentication and Its Manageable Costs

Integrity, involves authentication processes employing algorithms and hardware solutions. Biometric technologies and two-factor authentication mechanisms have matured, providing enhanced security without imposing exorbitant expenses. The industry's widespread adoption of these authentication methods underscores their manageability in terms of cost.

## The Complexity and Costs of Achieving High Availability

***A Necessity with Elevated Costs***: Ensuring high availability demands a multi-faceted approach, prominently featuring redundancy. Organizations invest in backup systems and failover mechanisms to eliminate single points of failure. This redundancy extends to both hardware and software components.

***Technologies for Resilience***: Defending against disruptions requires advanced technologies. Sophisticated network monitoring, intrusion detection systems, and resilient communication protocols are integral to enhancing resilience and mitigating risks. Achieving jam resistance and fault tolerance in adverse environments necessitates ongoing investments.

***Infrastructure Challenges***: High availability is closely tied to the infrastructure supporting information systems. Distributed systems, load balancing, and geographically dispersed data centers are crucial for maintaining seamless operations..



**Economic challenges of high availability are evident, which requires prudent risk management. Gain further insights from "The Economics of Information Security" by Ross Anderson.**

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