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Analyzing the CIA Triad and Describing the Differences of Availability vs. Accessibility

Summary | Describing the CIA Triad

The CIA Triad, also called the AIC Triad to avoid confusion with the Central Intelligence Agency, forms the foundation of cybersecurity. Its three elements are Confidentiality, Integrity, and Availability. Confidentiality is the practice of preventing unauthorized users from accessing sensitive information while allowing authorized users access to the same data. Integrity focuses on maintaining the trustworthiness of data by preventing malicious tampering. While Availability maintains consistent accessibility for authorized users. These three components describe how cybersecurity professionals safeguard user information while keeping systems online and accessible.

Summary | Availability Vs. Accessibility. What's the Difference?

Availability and Accessibility are often used interchangeably; however, there are key distinctions that make each term unique. Availability focuses on keeping systems online, so they are available to authorized users. Accessibility refers to designing data systems that are easy to use for all people, including individuals with disabilities.

History of the CIA Triad

The term CIA Triad first originated in 1988, but the concept of the CIA Triad is untraceable, as it is a merging of ideas on Confidentiality, Integrity, and Availability over time. However, it is possible to trace two of the elements of the CIA Triad, confidentiality and Integrity. Confidentiality first appeared in a 1976 study by the United States Air Force, while integrity is traced to a 1987 dissertation titled "*A Comparison of Commercial and Military Computer Security Policies.*" The dissertation focused on methods for ensuring data accuracy in

commercial data processing. The origins of the term availability are unclear, but its concept was popularized in 1988, along with the CIA Triad (Cegal).

Why is the CIA Triad Important?

The CIA Triad forms the basis for cybersecurity by using the most important basic concepts to create a system that allows for widespread security compliance and provides accessible security guidelines. This system can help IT professionals spot weaknesses in their systems, break the security process into manageable chunks, and find value within the elements of the CIA Triad to create a stronger cyber defense network.

Everybody Interacts with the CIA Triad

Everybody who has used an online retailer has undoubtedly encountered the CIA Triad, but they probably didn't notice it. So, here is a breakdown of how people interact with the CIA Triad when accessing online retailers.

- **Confidentiality** happens when a user first accesses an online retailer's website, application, or any other service where a user login is required. Sometimes users are asked to input their username and password, other times it may be their fingerprint, but they're all the same. If it's an authorized user with a legitimate account, they may access the site, app, or service provided by the retailer.
- **Integrity** is the process of keeping the user's data accurate and making sure it remains that way. If the system detects that significant changes were made to the user's data, then said user would be notified immediately. After a purchase is made online, usually the connected email address receives a confirmation email, which allows the owner of that email to verify that their data is correct and unaltered.
- **Availability** in this case would be the ability to log onto your account during any hour of the day and verify the status of your purchased item and any changes made to your account.

What does Availability Mean Exactly? How Big of an Impact can Availability Have for Companies?

Availability is described as “ensuring that a system is operational and accessible to authorized users when they need it” (Watkins). If a system is determined to be unavailable, businesses could face severe financial losses and even shut down completely. For example, when NotPetya infiltrated Maersk’s computer systems, it took down their servers and shut down 76 of their port terminals for two weeks. This attack cost Maersk around 400 million dollars, but some analysts believe the financial loss to be in the billions. If Maersk weren’t the biggest shipping company in the world, NotPetya would have crippled its systems to the point of shutting the business down. This means that in the business world, the availability of servers, services, networks, etc., is vital to the longevity of the company.

What does Accessibility Mean Exactly? How Does it Compare to Availability?

Accessibility is described as “referring to the design of systems that can be easily understood and operated by as many people as possible. This can include—but is not limited to—individuals with disabilities” (Watkins). Accessibility, while still important, does not have nearly as broad an impact as availability since its main purpose is user experience. However, in some cases, if a website or service is not accessible to an individual with disabilities, then it would not be available for them to use either. Thankfully, in the United States, there are some protections on website accessibility for disabled people, which comes under Title II of the Americans with Disabilities Act. This Act specifically focuses on state and local government websites and applications so disabled Americans can still access online government resources (U.S. Department of Justice).

Conclusion

In conclusion, the CIA Triad forms the foundation of a successful and efficient cybersecurity framework. This framework aims to protect organizations and individuals alike, while still maintaining operational flow. This framework has three elements: Confidentiality, which is based on allowing authorized users access to data while blocking unauthorized users. Integrity aims to maintain data trust and prevent threat actors from manipulating data. While availability is focused on maintaining servers and providing users with consistent access to servers and their

data. Additionally, availability is not to be confused with accessibility, which is the idea that the design of systems should be inclusive for as many people as possible.

References

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