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CIA: The Not-So-Secret Acronym that runs the IT World

BLUF

This write-up concerns the differences between authentication and authentication with examples, in addition to what the CIA Triad is and its uses (also some examples)

The Difference between Authentication and Authorization

Authentication generally deals with initial access into the system, and you are who you say you are (verification). For example, when logging into Google Drive or any similar site, you are presented with a username and password that must match in order for you to login. Authorization deals with how much access you have to the system and what you can do within it (Chai). An example would be what you can do with file ABC, can you edit or just read it?

The CIA Triad

The CIA triad is a combination of terms which are used to help organizations information security (Chai Article). Confidentiality describes the measures taken to prevent sensitive information from unauthorized access (Chai). A common example of a confidentiality measure is encryption, more specifically, encrypting web traffic between server and client in a bank transaction. Integrity describes the nature of the data and usually involves preventing unauthorized actions (usually modifications) on data, files, programs (Chai). For example, using a hash can prove if the data is in the same form: unchanged and/or authentic. A hash produces a completely different output even with the slightest change of data – meaning hashes can be used to prove if a file was changed or not, which is very important in forensic investigations. Additionally hashes are used in place of passwords because they are not reversible; therefore, if a password database is compromised, a malicious user would have to spend a long time to get your password in plain text. (Note: using unique passwords likely means your password won't be found.) Availability generally deals with the uptime of the servers, network, and the other various infrastructure devices at your organization (Chai). Availability requires the most & constant

maintenance out of the CIA triad because availability encompasses all the systems that make up your organization. An example of an availability measure would be RAID - which could help prevent fallout from a faulty disk.

Conclusion

Authentication & authorization usually work together; however, they have different functions. Authentication deals with initial access and verification; authorization deals with what a person or role has access to and to what extent. Additionally, the CIA triad consists of three terms, each with different meanings. Confidentiality deals with protecting data from unauthorized access; integrity deals with preventing unauthorized modifications to data and availability deals with keeping systems up via redundancy of power supply, RAID, and/or other methods.

References

Chai, Wesley. "What Is the CIA Triad? Definition, Explanation, Examples: TechTarget."

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