Daija Brown
Mr. Kirkpatrick
Cybersecurity, Technology & Society-200T
08 February 2026

# The CIA Triad's Role in Data Security

The Confidentiality, Integrity, and Availability are the backbones of data privacy and security. Authentication and authorization, while similar, are different steps that ensures the right user has the right access.

Confidentiality is synonymous with secrets. Not all data is meant to be shared, and sharing that data could be met with implications. In previous roles, I've measured the impact of a certain data by looking at the CIA Triad for each data type. For confidentiality, I look at the impact of data sets if someone gained unauthorized access to that data. Unauthorized access isn't always a breach. There are some cases where a user may obtain access to data they're not supposed to see. One instance of note is the permissions creep that occurred with Copilot. "Copilot respects existing permissions. But its ability to reference enterprise files means overshared or misconfigured Microsoft OneDrive and SharePoint permissions can surface highly sensitive documents to unintended users" (Nayak).

Integrity can be compared to trust. "Integrity involves maintaining the consistency, accuracy and trustworthiness of data over its entire lifecycle" (Chai). If your data is corrupted, how can you trust it? The answer is, you can't. Chain of custody is a great way to understand how important integrity is for evidence, which is a form of data. If the chain of custody is mishandled, important evidence could become inadmissible. This is especially important in the

digital age with emails, videos, and files. These data types include metadata, which can be important in investigations.

When I think of availability, I think of reliability. Availability represents your ability to access a file or solution whenever you need to. The inability to gain access to resources can cause a great strain on an organization, and damage the reputation of the provider. In July 2024, CrowdStrike faced an outage that impacted the healthcare, airlines, and finance industries across the globe. While cloud solutions appeal to an organization's availability needs, it is important to have a contingency plan to mitigate an outage. A great way to mitigate this is to create a Business Continuity Plan (BCP) by determining your Recovery Time Objective (RTO) and Recovery Point Objective (RPO). The RTO represents the length of time a system can be down, or absent, before it becomes business critical. The RPO represents how much data, measured in time, can be loss before it becomes business critical.

Authentication and authorization work together to ensure the right user has the right access. The first step to access to a system is to authenticate, or to verify your identity. There are several methods to authenticate ranging from basic to modern. Most sites use username and password for authentication because they are two things you know and can be unique. This can be paired with an authentication app like Duo to provide two factor authentication (2FA), or in some cases, multi factor authentication (MFA). Authorization is the second step. It dictates what you're allowed to do and your access once you are in the system. Permissions are an example of a user's authorization in relation to a system. While installing a program, you may be prompted to authorize a program to perform the requested actions. If the PC is yours, you can freely install the program without issue. If you try the same on a work PC, without the proper permissions,

you will most likely fail. This is because the GUI requires you to authenticate prior to providing you the authorization to make the change.

In Conclusion, the CIA triad is the backbone of data privacy and security. Each component serves a different purpose, but work together to make a cohesive concept for securing data. Additionally, authentication and authorization may seem similar, but they work together to ensure the right person has the right access.

Works Cited

https://www.forcepoint.com/blog/insights/top-microsoft-copilot-security-risks (Nayak)

https://www.techtarget.com/whatis/definition/Confidentiality-integrity-and-availability-CIA?jr=on (Chai)