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# IT Security Main Principles

**Confidentiality**
**Integrity**
**Availability**

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## Why is CIA important?

The primary goals and objectives of security are contained within CIA triad. Security controls typically evaluates on how well IT systems address these three core information security tenets and overall a complete security solution should adequately address these. Vulnerabilities and Risks are also evaluated based on the threat they pose against one or more of the CIA principles.

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## What is Confidentiality?

Confidentiality is the concept used to endure the protection of the secrecy of data, objects / resources. It focuses security measures on ensuring that no one other than the intended recipient of a message receives it or is able to read it. Two elements are distinct. Objects and Subjects. An Object is the passive element such as files, computers, network connections and applications. Subject is the active element, such as Users and Programs. A subject acts upon an object.

The management of the relationship between subjects and objects is called Access Control. A number of technologies and protections can be employed to ensure confidentiality against threats. These are encryption, network traffic padding, strict access control, rigorous authentication procedures, data classification and extensive personnel training.

Equally important are the meanings of Sensitivity, Discretion, Criticality, Concealment, Secrecy, Privacy, Seclusion, and Isolation. Companies must evaluate the nuances of confidentiality they want to enforce.

## What is Integrity and how can we protect it from attacks?

Integrity is the concept of protecting the reliability and correctness of data. It ensures that data remain correct, unaltered and preserved. When this principle is maintained it provides a means of for authorized changes while protecting against intended and malicious unauthorized activities such as viruses and intrusions as well as mistakes made by authorized users (Oversights). In order to ensure the system integrity controls must be in place to restrict access to data, objects, and resources. Activity logging is also necessary. Validating object integrity across storage, transport, processing requires numerous controls and supervisions.

Numerous attacks focus on the violation of integrity. These include viruses, logic bombs, unauthorized access errors in coding and applications, malicious modification, intentional replacement and system "back doors". Integrity violations can occur because of the action of a user including admins. Aspects of integrity are Truthfulness, Authenticity, Validity, Nonrepudiation, Accountability, Responsibility Completeness, Comprehensiveness. Companies' IT departments, should pay attention to the integrity principles, and embrace the various topics. Future policies, standards, guidelines must embrace not only the vast area of technologies but the interrelationship with Confidentiality. You cannot have Integrity without Confidentiality and vice versa.

## What is Availability and what are the threats?

Availability is the warranty that authorized subjects are granted timely and uninterrupted to access the objects. Availability applies to all types of resources, including network services, communications, access control systems. In order to guarantee the system availability controls must be in place to ensure authorized and acceptable level of performance, such as to handle interruptions, to provide redundancy, to maintain reliable Backups, to prevent data loss or destruction.

Threats to availability are device failures, software errors, and Environmental issues (heat, flooding, power loss, etc.). Similarly, **to other concepts violations of availability are not only intentional but are also caused by human errors**, oversight or ineptitude. This includes accidentally file deletion, over utilizing hardware or software and under allocation of resources. Many of these policies are falling in the BCP planning.

**Availability depends on Integrity and Confidentiality.**

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