

High-Assurance Environment

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Discussion

A High-Assurance Environment requires justified confidence that its systems, services, infrastructure, processes, and controls satisfy defined security, safety, reliability, integrity, availability, or mission objectives.

The environment establishes that confidence through controlled design, verified implementation, repeatable operation, traceable configuration, risk assessment, testing, monitoring, and supporting [Evidence](#).

A High-Assurance Environment places greater emphasis on demonstrable trustworthiness than an ordinary operating environment. The required level of assurance depends on the consequences of failure, compromise, incorrect operation, loss of availability, or loss of evidentiary integrity.

A High-Assurance Environment may also operate as a [Regulated Environment](#), but external regulation does not define high assurance by itself.

Definition

operating environment that requires justified confidence that its systems, services, infrastructure, processes, and controls satisfy defined assurance objectives

Source

Generalised from systems assurance, safety engineering, security engineering, mission assurance, and high-integrity systems usage and specialised for the Crucible architecture and operational model.

Note

High assurance concerns the strength and basis of confidence in an environment. It does not identify a specific technology, deployment model, regulatory regime, or accreditation method.

The required assurance objectives and evidence depend on the mission, threat model, consequences of failure, and governance context.

Example

A defense organization operates a disconnected software factory that uses controlled configurations, hardened images, verified dependencies, repeatable builds, compliance scanning, and traceable evidence. The organization treats the factory as a High-Assurance Environment because compromise or incorrect operation would create significant mission risk.

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