

GemSeal™ Guard

High Assurance Integrity for SCADA

Class A1 crypto seal release guards can provide high integrity connections to critical systems across untrusted (even Internet) infrastructure.

Problem Statement

Operators need access to Supervisory Control and Data Access (SCADA) systems that are not available from their untrusted or public networks. If their environment does not include a (usually dedicated) high integrity infrastructure, the connection demands high assurance protection from the shared network.

Concept: Crypto Seal Guards

Class A1 GemSeal Guards use a “crypto seal” to cryptographically bind packets leaving a high integrity system with a label for their high-integrity source. The guards forward each labeled packet across the untrusted network to a guard at its high integrity destination. Destination guards validate the data and label of each packet against the destination integrity label before releasing it. Altered and other low integrity packets cannot enter the destination because they will not have a crypto seal binding a label to a matching high integrity destination label.

Class A1 High Assurance MLS

GemSeal Guards will use the GEMSOS™ security kernel’s label integrity and distributed key management mechanisms. NSA previously evaluated the GEMSOS security kernel and RAMP at Class A1 in the Gemini Trusted Network Processor (GTNP). NSA deployed the GEMSOS kernel for key management and distribution in their Class A1 BLACKER VPN.

Completed POC Demonstration

Aesec has delivered a proof of concept (POC) demonstrating crypto seal guards connecting devices across an Internet-technology network. The POC uses a pre-production update of the GEMSOS security kernel derived from the Class A1 GTNP.

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