Enforcing Trust in Pervasive Computing with Trusted Computing Technology.

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1st International Workshop on Critical Information Infrastructures Security

Outline

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Overview

Definition

Trusted Computing Group: A trusted system or component is one that behaves in the expected manner for a particular purpose.

Deployment

- TPM (Trusted Platform Module) market saturation by 2010 - IDC.
- Processor support (Averill) tentatively - 2008.
- OS support - soon?

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TPM support

Measuring, Storing and Reporting

- Integrity measurement is the process of obtaining metrics of platform characteristics that affect the integrity (trustworthiness) of a platform; storing those metrics; and putting digests of those metrics in PCRs (Platform Configuration Registers).
- Storage has a double meaning in Trusted Computing. It refers to the intermediate step between measurement and report but also to the protection of keys and data with a TPM
- Integrity reporting is the process of attesting to the contents of integrity storage.

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Remote Attestation

- This is the mechanism through which a challenger can inspect a remote platform's state.
- Before a platform can attest to its state it must obtain a credential using either a Privacy CA or DAA based approach
- In either case the end result is the same. The platform obtains a credential (or a means of issuing credential like statements) that will be used to adduce current platform state.

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Intel's La Grande, AMD's Presidio, ARM's Trustzone

- Protected Execution: Provides applications with the ability to run in isolated protected execution environments.
- Protected Input: Provides a mechanism that protects communication between the keyboard/mouse and applications running in the protected execution environments.
- Protected graphics: Provides a mechanism that enables applications running within the protected execution environment to send display information to the graphics frame buffer
- Protected Launch: Provides for the controlled launch and registration of the critical OS and system software components in a protected execution environment.

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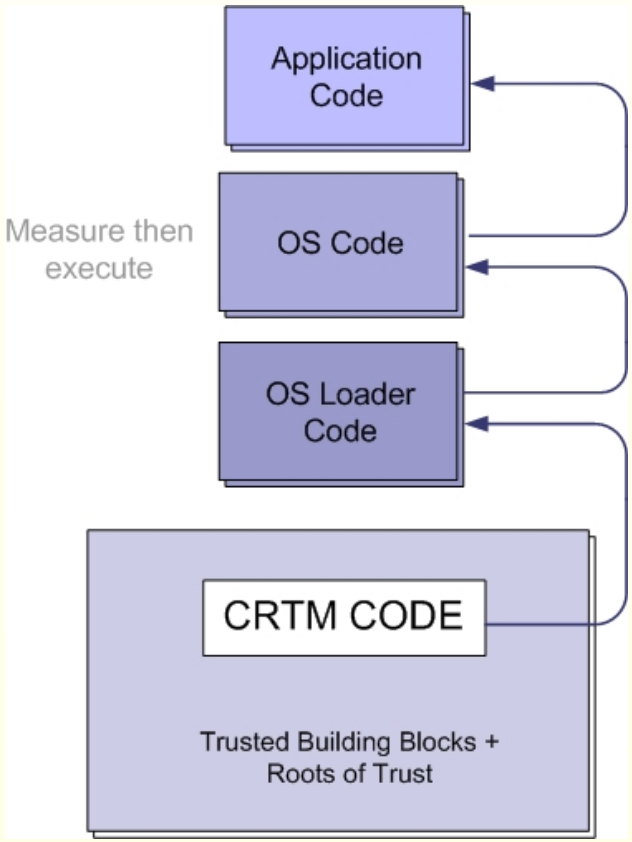

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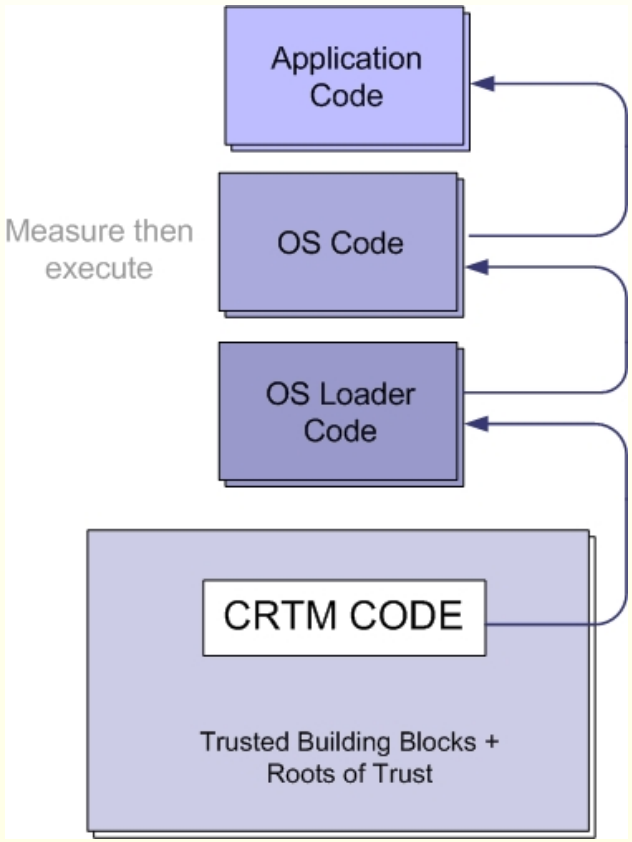

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Controlling Access After Distribution

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Set-Up:Credential acquirement

1. Instructs *TPM* to generate non-migratable keys.
2. *TPM* creates a *TPM_Key* specifying authorisation data and an acceptable platform state for it's usage.
3. Have this key certified by the *TPM*.
4. *TPM* returns the *TPM_Certify_Info* describing the certified key.

Access Control

- Simple Challenge-Response based protocols incorporating credentials.
- *TPM* would unseal the encrypted document at any time provided the authorisation data is valid.

Trusted Printing Service

- Client requests server's attestation.
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Concluding points

- Trusted Computing could end up playing an important role in future architectures. Both from a hardware perspective and in establishing communicability infrastructure - Trusted Network Connect.
- Stable force of homogeneity in heterogenous environments. Perhaps not at the minor device level (Ubicomp in its truest sense) but more at the meta-interaction level performing abstract services.

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