Engineering Trustworthy Systems

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Abstract. Focus on building systems that are secure by design is being driven by increasing number of security threats and the cost of system compromise. The pervasive deployment of information technology in entertainment to finance management to health care to critical infrastructures has lead to a situation where today - everything is a computing device which can process and store information. These are networked for communication.

There is increasing interdependence of all these networked computing devices which have kinetic impact on the real world. The increased interdependence leads to a situation where a security failure at one point can lead to a cascading domino effect leading to the ultimate failure of critical infrastructure. Their failure can be disastrous to human life and national security. Therefore, today the need for engineering secure systems is as necessary as the traditional engineering requirements such as performance, energy-efficiency, cost, programmability and usability. This emphasis on engineering security can drive the development of architectures and methodologies that are essential for achieving trustworthiness in the realized systems. This talk will introduce the challenges in realization of systems that perform securely in the real world. An approach to engineering the systems right from the architectural level to the final implementation and security assessment of the systems to determine the adequacy of robustness will be suggested.

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