In order to improve the performance, embedded applications are distributed on several IP cores of Multi-processors Systems-on-Chip (MPSoCs). Such a strategy forces the peer interaction among the different computation components, which have to exchange data through the Networks-on-Chip (NoC). For applications for which security is an important concern, data exchanged among the IPs must remain confidential. Security zones are built to wrap the sensitive IPs and guarantee their protection from malicious applications. Several approaches have been proposed to create the security zones. However, due the ever-changing nature of these zones, the impact of creating and destroying the zones on the system performance is not negligible. In this work, for the first time we propose the implementation of smart security zones that efficiently create security zones by combining robust contributory group key agreement protocols and the NoC routing. Our approach can efficiently create, modify or remove continuous and disrupted security zones.
We evaluate our approach under synthetic traffic patterns and the execution of SPLASH2 benchmarks. We show that our architecture is able to manage dynamic security zones while presenting low impact on the performance and cost of MPSoCs.

Stichworte: Security; Network-on-Chip; Diffie-Hellman, routing

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