Management System for Secure Mobile Agents

Master Thesis

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Abstract

Mobile agents have already caused great attention because of their mobility, autonomy, flexibility and low bandwidth consumption. They offer a new paradigm in which a piece of code can suspend its execution on a host, then transfer its own code and current execution state to another host, and resume its execution.

Despite the advantages, mobile agents have not been widely deployed in practise. Security issues are the main reason that affects their widespread deployment. But most research papers focus only on studying the security of agents' platform and communication between agents or between agent and platform, mobile agents are assumed to be inherently secure. So in this project we researched the parameters of agents, agents' evaluations procedures and the publishing of agents in open networks.

Our research of agents' parameters is based on Foundation of Intelligent Physical Agents (FIPA), which described basic parameters for mobile agents. After mobile agents are created, they are subjected to series of evaluations by Trust Appraiser and Privilege Authority. People can identify, authenticate and authorize agents based on the signatures provided by Trust Appraiser and Privilege Authority. After creation of agents with all necessary parameters and with a set of evaluations, security of agents can be guaranteed. Then, agents will be published in the Agent Factory.

For the agents' parameters, we use agents Id, trust level, agents' code and baggage, etc. Agent Creator, Trust Appraiser and Privilege Authority provide their signatures in PKCS#7 format, which can be used to identify agent, its trust level and the role of agent. After this, agents will be published in the agent factory via web service.