A Model Analysis of a Distributed Monitoring System using a Multi-Formalism Approach

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Abstract. Distributed and heterogeneous monitoring systems have often performability and dependability requirements. In such systems intelligent scan of all sensors, in addition of normal monitoring tasks, is very appealing and mobile agents, capable of execute tasks with real-time constraints, can be used to handle possibly dangerous situations. Design and tuning of these systems is a very hard task. In this paper a multi-formalism approach based on model-checking techniques, queuing networks and timed Petri nets is presented to model a real-time-mobile-agents based monitoring system. With this approach, different component of the system may be modeled by using the most suitable modeling formalism coping both with the need for modeling agent behaviors, real-time constraints and the load of the overall system.