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**Evaluation of time performances
of Ethernet-based Automation Systems
by simulation of High-level Petri Nets**

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In this work, two time performances of switched Ethernet automation systems that use a client/server cooperation model are evaluated:

- The response time from an occurrence of an input event to the occurrence of the corresponding output event;
- The network cycle time for the scanning by a controller of the whole set of its remote inputs/outputs modules.

The conjunction of three time consumption mechanisms makes both time performances variable and difficult to compute in an analytic fashion. Thus, the proposed method is based on simulation of a timed and coloured Petri net model of the dynamic behaviour of the whole automation architecture. The results which have been obtained on six benchmark architectures enabled us:

- To show that multi-controllers architectures using a client/server cooperation model provide faster network cycle times than those based on master/slave and producer/consumer models;
- To quantify the influence of the time consumption mechanisms on these performances.