Performance Analysis of CoS of Bridged WorldFIP and ATM Networks for Real Time Communication

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The implementation of the remote control, monitoring and maintenance of industrial automation systems based on real-time criteria is becoming more difficult as the distance increases. ATM is an important transport, switching, network management and backbone technology that offers different solutions to real-time communication with different classes of service. In this study, the effects on real-time communication of AAL 3/4 and AAL 5 classes of service of ATM were researched on a model in which the communication between WorldFIP industrial network nodes and ATM network nodes was provided over a bridge. First, a communication system consisting of a WorldFIP network, ATM network and bridge were modeled on a simulation tool and implemented. Afterwards, the system performance was analyzed under different loads within the classes of service AAL 3/4 and AAL 5. The analysis results have indicated that compared to AAL 5, AAL 3/4 better satisfies the real-time communication criteria.

This result has shown that in both real-time access to a remote industrial automation systems and communication among remote industrial automation systems, ATM is preferable as a backbone and AAL 3/4 as the class of service.

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