



Study on PLC with Switch Management in Intelligent Manufacturing Network

Guangfu Wang

Sichuan Electromechanical Institute of Vocation and Technology

Panzhihua, Sichuan, China

Emails: wangguangfu126@126.com

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Abstract- This paper discusses a new solution for switch management in intelligent manufacturing network. It makes PLC (Programmable Logic Controller) communication module have the switch management features and exchange I/O data in manufacturing network. The switch manager has used the chip of the Ethernet switch device 88E6165. The Marvell 88E6165 device embedded in communication devices is a single-chip 6 port gigabit Ethernet switch with five integrated gigabit Ethernet transceivers. It performs the tasks of switch management, a series of services and applications are supported in PLC when it is running in a manufacturing network. It also analyzes the potential network topologies in which our customers may use the communication module and how the communication module's architecture facilitates these topologies. Actors associated with the switch management service are described further. It proposes a new mechanism to minimize the congestion based on the measure of taking an adaptive decision during transferring multicast messages to handle multicast message growing with industrial Ethernet for manufacturing systems. Proposed approach is to accomplish a device requesting to start and stop the reception of the multicast streams. It joins and leaves message requests through IGMP. Final, an application

prototype system contains various devices and the global architecture is proposed to provide transparency between control network and device (IO) network.

Index terms: IGMP, industrial Ethernet, manufacturing network, switch management, PLC