Linux drivers for industrial network protocols

Background: Linux is widely used in servers and personal computers market these days. And during last several years there were serious and successful tendence to use it for telecommunication and home appliences also. However, there are areas, where spread of Linux is complecated due to historical reasons – one of such areas is automation and control (both buildings and industrial). To handle automation and control tasks were developed many different solutions, which are not widely known and used in neibourghood areas. For example for communication tasks such specialized protocols as BACnet, Profinet, ZigBee are developed, used solely in automation applications. One of the most widely adopted protocols - BACnet, the ASHRAE building automation and control networking protocol, has been designed specifically to meet the communication needs of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The BACnet protocol provides mechanisms by which computerized equipment of arbitrary function may exchange information, regardless of the particular building service it performs. As a result, the BACnet protocol may be used by head-end computers, general-purpose direct digital controllers, and application specific or unitary controllers with equal effect.

Problem statement: There is a number of Open Source implementations of BACnet, providing different levels of functionality, but none is providing full set of features yet. Proposed project aims to develop (or improve existing) complete usable BACnet solution, which could be used by wide range of applications. Project deliverables shall include:

- Source code for BACnet protocol stack for Linux, tested on various underlying media and with

complex application scenarios

- Test/demonstration scenario, showing functionality of developed solution
- Documentation in a form of final report

Next steps: Possible extension of this project could be implementation of support for IEEE802.15.4 phisical medium for BACnet driver (IEEE802.15.4 is developed by Siemens CT).

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