Cybro SCGI Server performance report

Introduction

The object of this report is to reveal the objective performance of CybroScgiServer v301. All measurements refer to read, write performances are not measured. All measurements are typical long term values. Initialization and the first read usually take more time, that is not included in results.

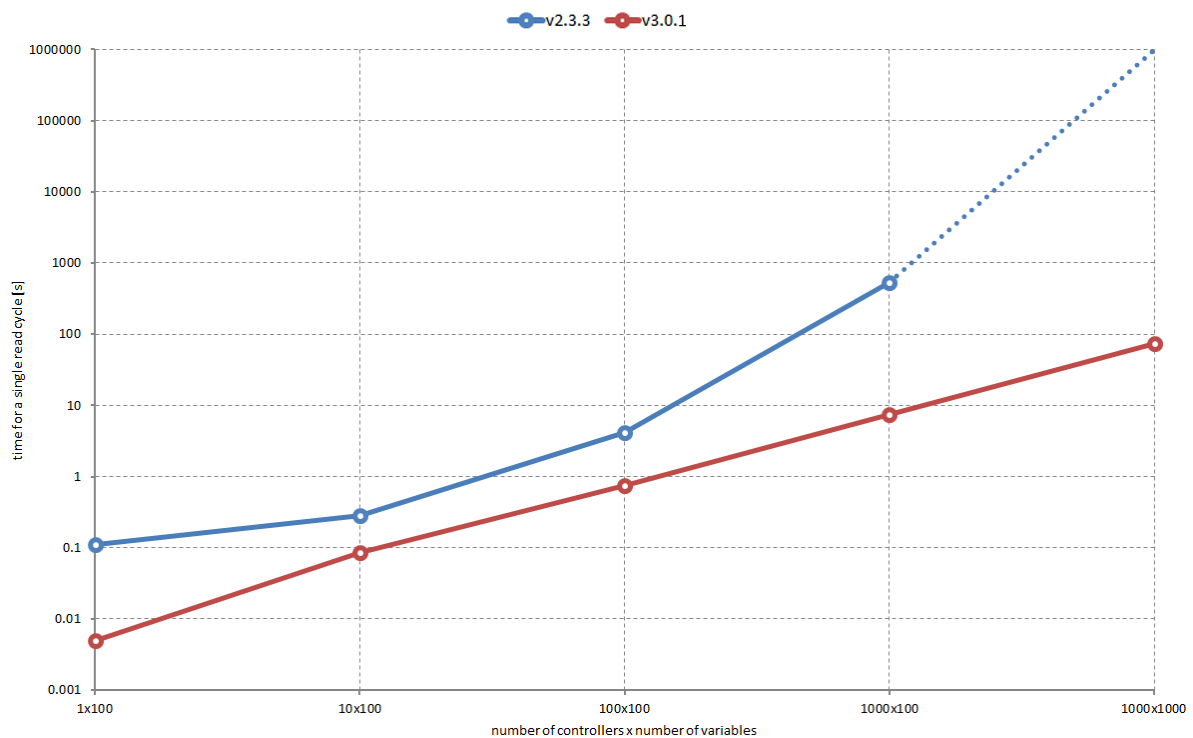PLC   the number of controllers
VAR   the number of variables for each controller
TIME   time to complete a single read cycle (dbase write not included)

Testing is done using a combination of virtual and physical Cybro-3 controllers, connected to 100M/1G Ethernet network. Controllers are running a short program, resulting in best possible performance. A very long PLC program (scan greater than a few milliseconds), may slow the response down.

SCGI v233 vs v301

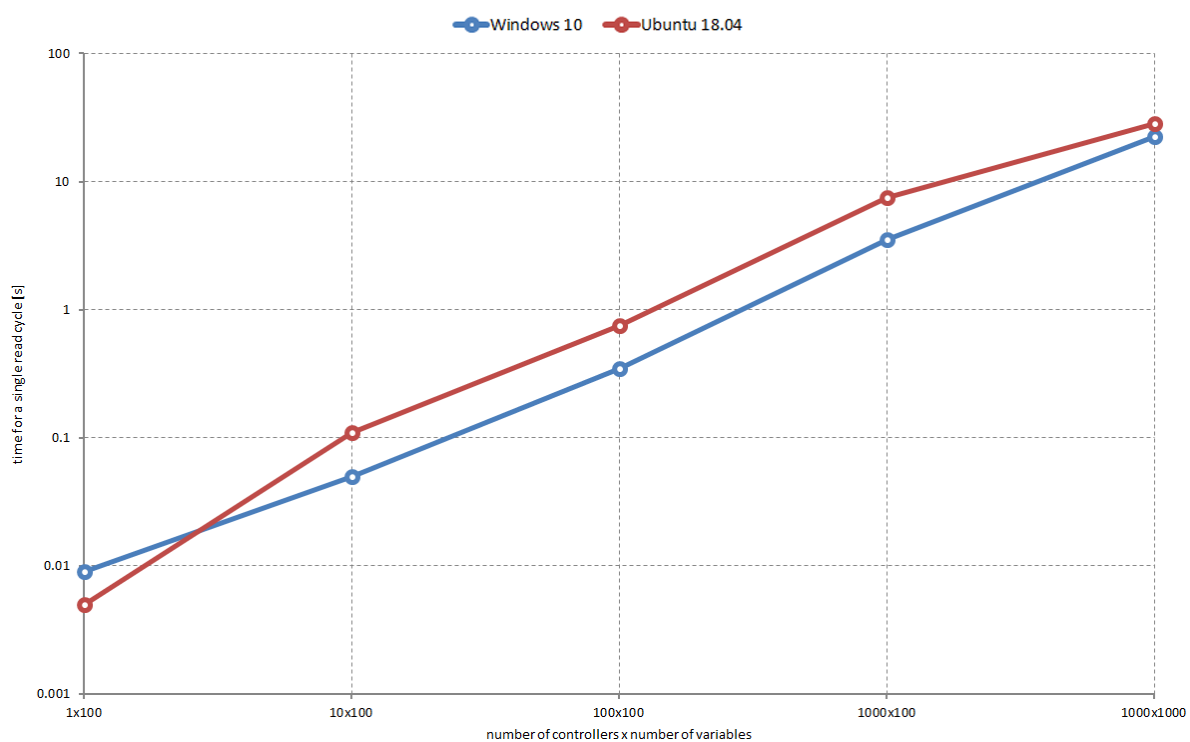Intel Core i5-10210U, 16Gb RAM, Ubuntu 18.04

PLC	VAR	SCGI v233	SCGI v301
1	100	0.11s	0.005s
10	100	0.28s	0.11s
100	100	4.21s	0.75s
1000	100	528s	7.51s
1	1000	0.25s	0.04s
10	1000	3.76s	0.41s
100	1000	not finished	3.17s
1000	1000	not finished	28.4s

New version is tested against the previous one. Previous has an exponential relation between number of variables and time needed to finish the request. New one has a linear relation, resulting in 3 to 50 times improvement at low to moderate load, and estimated 10000 times improvement at heavy load.

Windows 10 vs Ubuntu 18.04
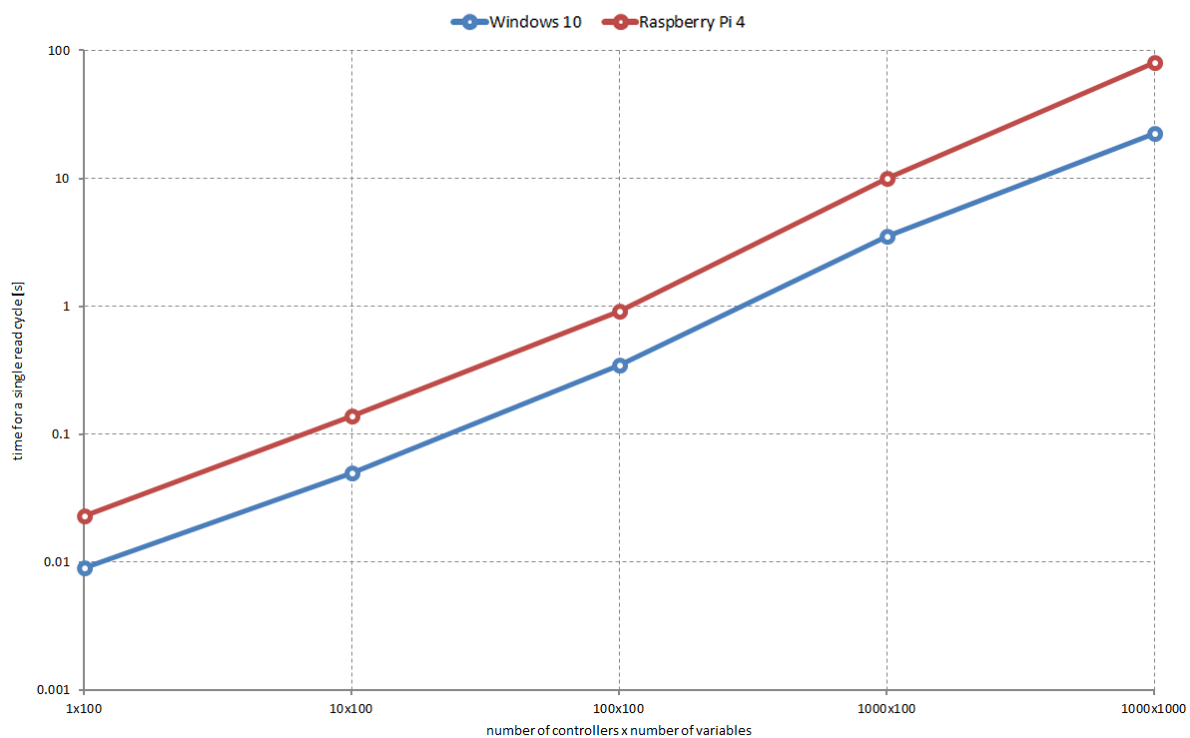
Intel Core i5-10210U, 16Gb RAM, SCGI v301

PLC	VAR	Windows 10	Ubuntu 18.04
1	100	0.009s	0.005s
10	100	0.05s	0.11s
100	100	0.35s	0.75s
1000	100	3.5s	7.51s
1	1000	0.02s	0.04s
10	1000	0.2s	0.41s
100	1000	1.9s	3.17s
1000	1000	22.6s	28.4s

There are no significant differences in performance between Windows and Linux systems.

Windows 10 vs Raspberry Pi 4

Intel Core i5-10210U, 16Gb RAM, Windows 10, SCGI v301
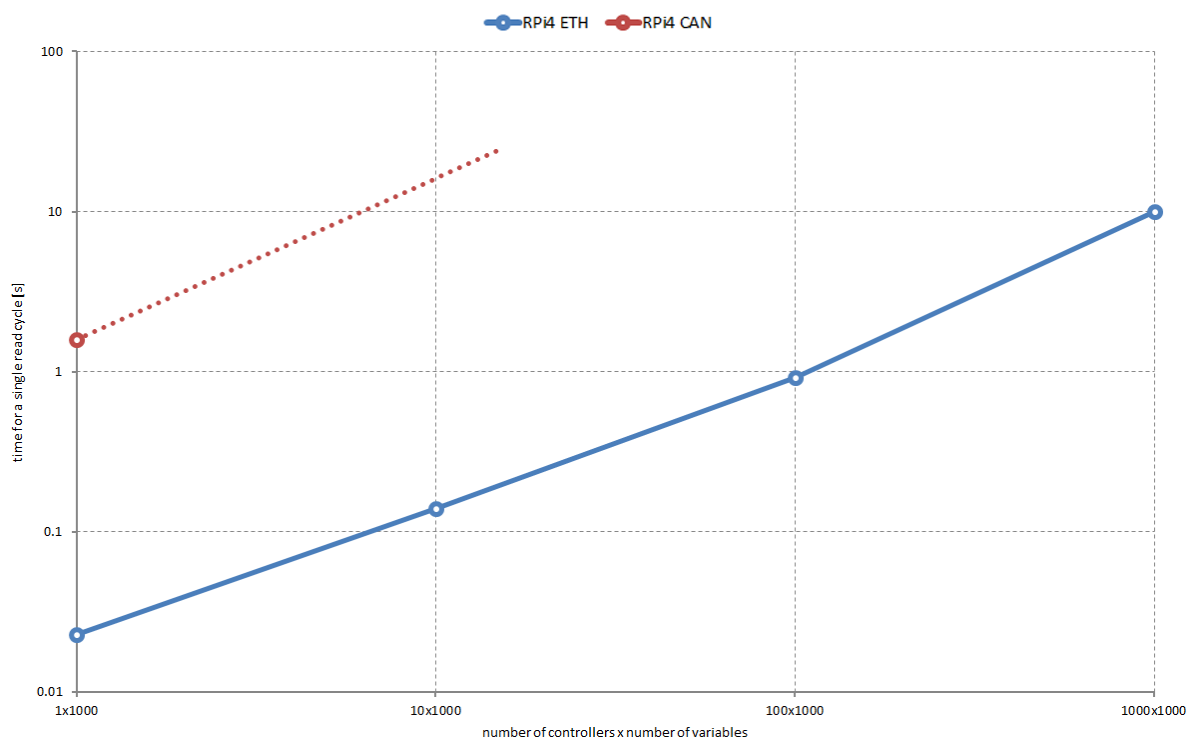Raspberry Pi 4, 2Gb RAM, Raspbian 2020-08, SCGI v301

PLC	VAR	Windows 10	Raspberry Pi 4
1	100	0.009s	0.023s
10	100	0.05s	0.14s
100	100	0.35s	0.92s
1000	100	3.5s	10.0s
1	1000	0.02s	0.1s
10	1000	0.2s	0.7s
100	1000	1.9s	8.0s
1000	1000	22.6s	80.0s

For executing CybroScgiServer, Raspberry Pi 4 is about 3 times slower then a desktop PC.

ETH vs CAN

Raspberry Pi 4, 2Gb RAM, PiCAN-2, Raspbian 2020-08, SCGI v301

PLC	VAR	ETH	CAN
1	100	0.023s	-
10	100	0.14s	-
100	100	0.92s	-
1000	100	10.0s	-
1	1000	0.1s	1.6s
10	1000	0.7s	-
100	1000	8.0s	-
1000	1000	80.0s	-

CAN interface (100kbps) is in reality about 20 times slower than the Ethernet (100Mbps).

Report issued by:

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