SHMS PLC Upgrades

Brian Eng, Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Amanda Hoebel, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen, and Amrit Yegneswaran

Physics Division, Thomas Jefferson National Accelerator Facility, Newport News, VA 23606

November 8, 2018

Windows 7 operating system's End-of-Life (EOL) is January 2020, at which time the Jefferson Lab Computer Center will block all computers running Windows 7 from the network. Rockwell Automation (RA) 1756-L62 controller used by Hall C's SHMS PLC system uses RSLogix software for controls and monitoring. This note presents the results of searching for a version of RSLogix software compatible with Windows 10, and ensuring that that firmware is compatible with the 1756-L62 controller.

According to the RA Knowledge base, the versions of RSLogix/Studio 5000 that are fully supported on Windows 10 are: v20 (20.04+), v24 (24.02+), v28 (28.03+), and v30 (30+). Fortunately, the latest firmware available for the 1756-L62 controller is 20.x, which overlaps with a software version that is supported on Windows 10.

The previous version of software and firmware running on the SHMS PLCs was v16, so RSLogix 5000 v20 and associated software (RSNetworx and ControlFlash) were installed on the main Hall C PLC computer, skylla7.

The SHMS PLC uses the redundancy functionality provided by a firmware bundle, where the PLC Controller, redundancy module, and communication modules all have minimum version requirements.

After the computer software was upgraded, all PLC modules were upgraded to the appropriate firmware (from 20.058_kit2). Once the firmware upgrade was completed, the redundancy modules would not synchronize, thereby resulting in the disabling of the redundant functionality.

It was determined that Time Synchronization must be enabled on the Ethernet modules for the redundancy functionality to work. Once Time Synchronization was enabled, no errors were found after all the upgrades were completed .

Now that the associated software and firmware have been updated to v20, which fully supports Windows 10, the PLC will be supported at least until 2028.