Advantech AE Technical Share Document

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Category	■FAQ □SOP	Related OS	N/A
Abstract	Jitter error when adding ModbusTCP with real-time protocol		
Keyword	CODESYS, Jitter error when adding ModbusTCP with real-time protocol		
Related Product	APAX-5580-CDS, ADAM-5560-CDS		

■ **Problem Description:**

The customer uses two kinds of Ethernet protocol at the same time and found out that the maximum jitter time will increase dramatically once the second protocol was added in the CODESYS project.

In the customer's application, they use Ethernet/IP and the Modbus/TCP protocol in their program. APAX-5580 have two different LAN ports, one is Intel i-210 which is for real-time protocol and the other is i-218 which is used for the system maintenance and non-real-time protocol so, in terms of the hardware system structure, APAX-5580 could deal with two kinds of different protocols at the same time without any problem.

However, as shown in Figure 1, the maximum jitter time for the Ethernet/IP which is a real-time protocol was increased to more than 10000us.
In this FAQ, we will point out the possible root cause of the problem and how to prevent it with the appropriate setting in the CODESYS.

Figure 1

■ **Answer:**

Whenever adding a new protocol in the CODESYS, in the I/O mapping option tab there will be a "bus cycle option" which is default set as "use parent bus cycle setting." (Figure 2)

If all of the protocols use this default setting, it means that both real-time and non-real-time protocol will share the same bus cycle and result in an undesirable increase in the jitter time.
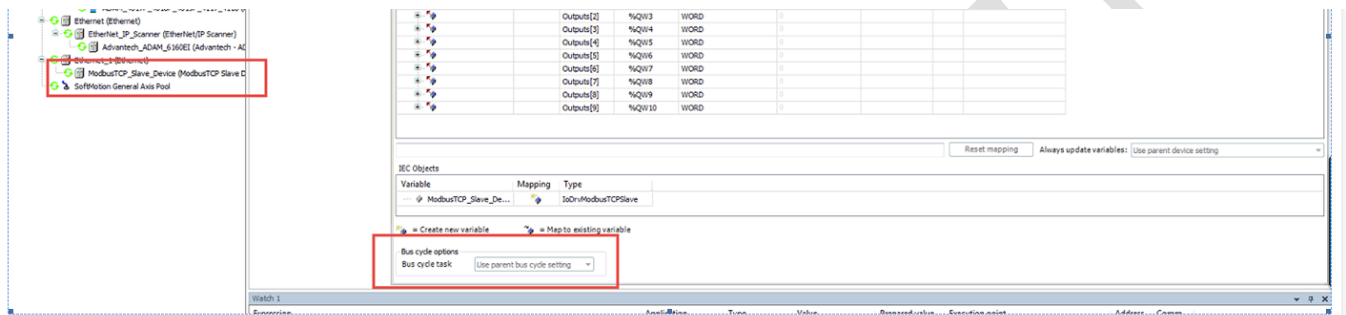

Figure 2

In order to prevent this problem, we will suggest the customer separate the program of two different protocols with the different tasks.

Actually, when adding a real-time protocol, the corresponding real-time task will be generated automatically (Figure 3). The user could select this task as the bus cycle task for the real-time protocol directly.
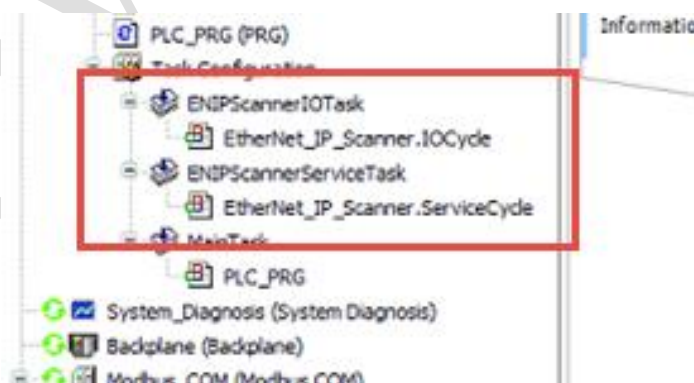

Figure 3

For the non-real time protocol, we could also assign another bus cycle task as shown in Figure 4.
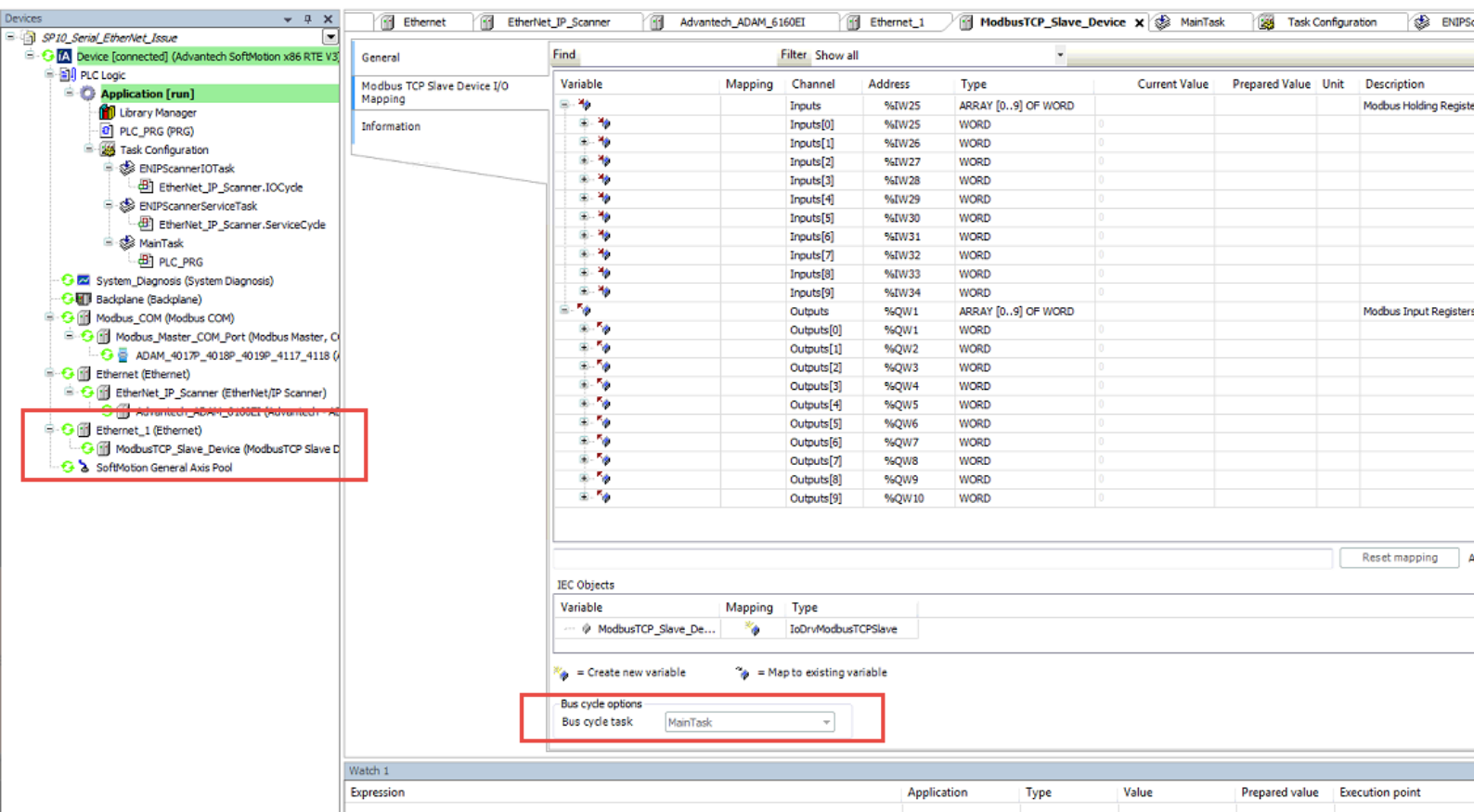

Figure 4

After adjusting these settings, as shown in Figure 5, the cycle time for the Ethernet/IP protocol is back to a reasonable range.

Figure 5