YASKAWA

Product Application Note

MPiec EtherNet/IP Communication via Cisco 1800 Router

Applicable Product: Yaskawa MPiec controller

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Subject: Application Note	Product: MPiec	Doc#: AN.MP2000iec.04
Title: MPiec EtherNet/IP Communication via Cisco 1800 Router		

Application Overview

This document describes the configuration required on a Yaskawa MPiec controller (if used as a scanner), configuration required on the scanner device (if the MPiec controller is used as an adapter) and the configuration of ports on an 1800 series Cisco router to enable EtherNet/IP communication between a Yaskawa MPiec controller and a third party device on a different sub network.

Router configuration is an advanced topic not fully covered by this application note.

Application Highlights:

Industry: EtherNet/IP users
Major Features: EtherNet/IP communication when the adapter and scanner are on different sub networks.

Products Used:

Component	Product and Model Number
Controller	Yaskawa MPiec
Software	Yaskawa MotionWorks IEC
Router	Cisco 1800 series
Third Party Devices	AB CompactLogix PLC

Implementation Method of Core Operation

Two different scenarios are discussed in this document.   They are:
1) The MPiec controller is the adapter (slave) in the communication architecture.
2) The MPiec controller is the scanner in the communication architecture

In both architectures, the configuration of the Cisco router remains the same.   The ports for both sub networks must be configured.   The IP addresses for the hardware ports on the router serve as the default gateway for the automation devices connected to each network.   The screen shown below is the router configuration:

Figure 1: Port configuration for Cisco 1800 router
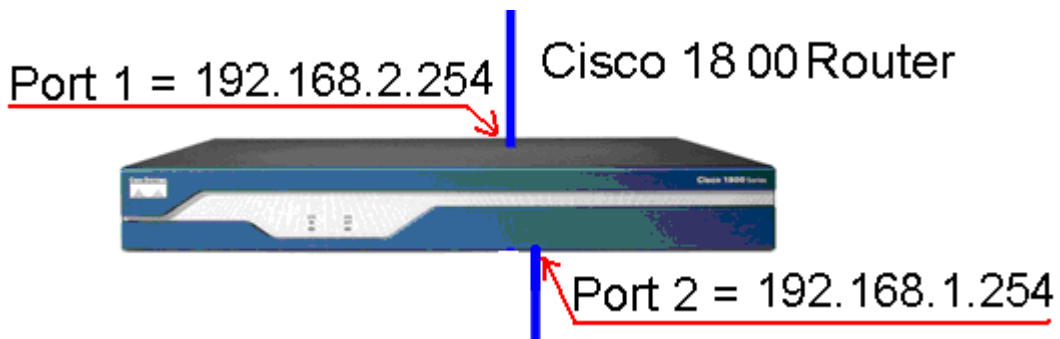
Figure 2: Port addressing on Cisco router

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1) The MPiec controller is the adapter

Ethernet/IP communication when there are two sub networks involved can be accomplished only if the EtherNet/IP scanner device is configured for point to point communication in the originator to target (O to T) message and requests point to point data in the target to originator (T to O) message. A screen shot of an AB CompactLogix PLC as the scanner and MPiec controller as the adapter is given below.
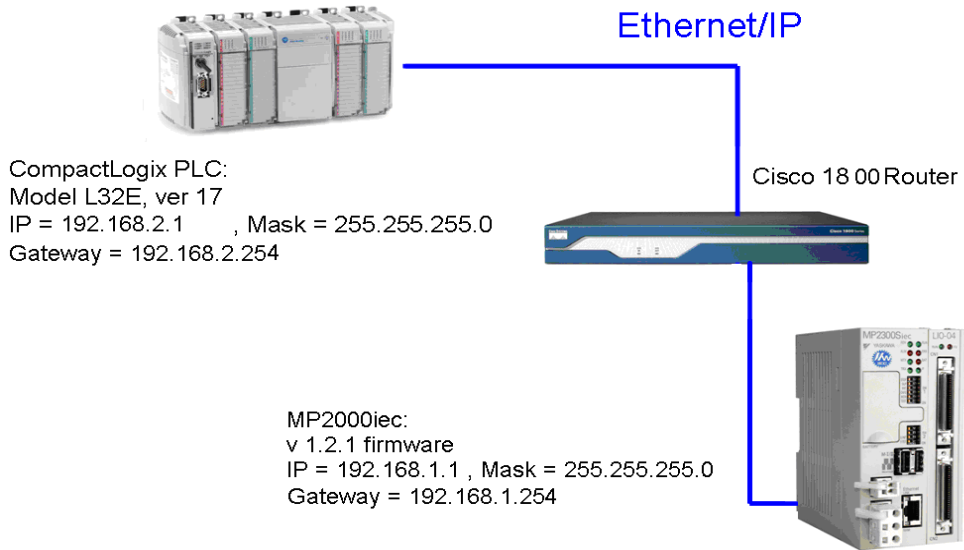
Figure 3: EtherNet/IP architecture with the MPiec controller as an adapter

The only configuration required in the MPiec is to simply enable the instances through which the communication is desired.

Figure 4: MPiec controller as an EtherNet/IP adapter

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In the special case of an AB PLC (CompactLogix) as a scanner device (on a different sub network from the Yaskawa MPiec controller), the MSG function block must be used to enable CIP messaging.   This is required because the normal configuration will not allow "Point to Point" as a setting.   The read and write configurations for MSG function blocks are shown in the figures below.
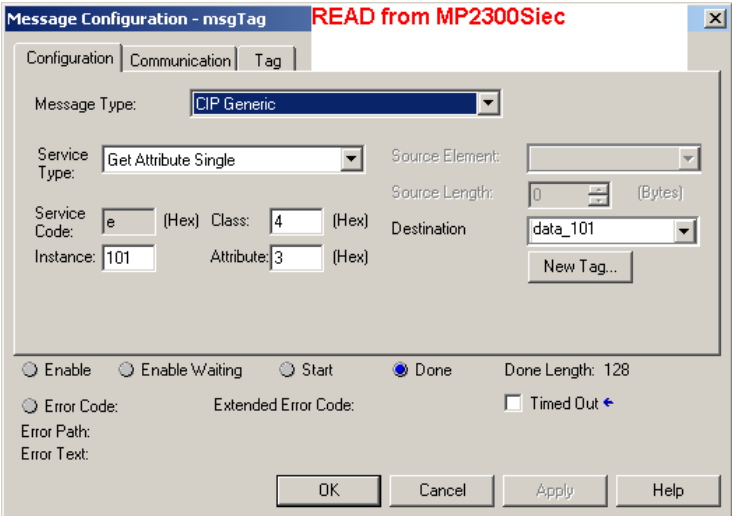

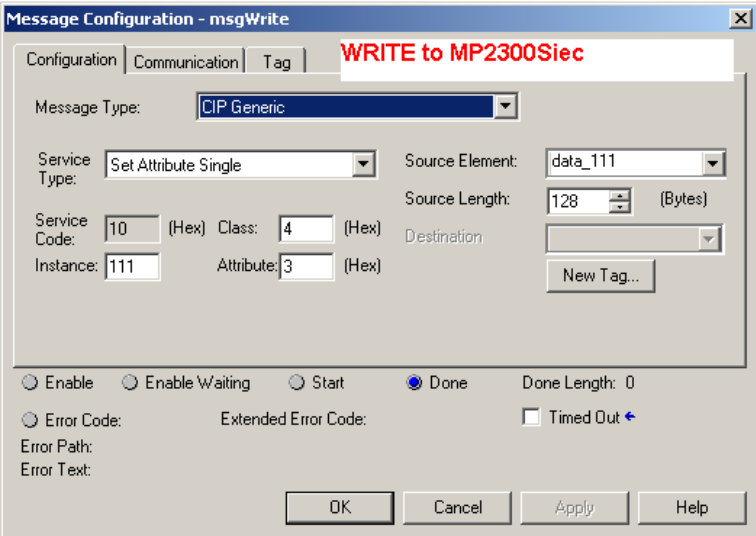Figure 5: Configuration to read from the Yaskawa MP2000Siec (instance 101)

Figure 6: Configuration to write to the MP2300Siec (using instance 111)

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2) The MPiec controller as the scanner

The architecture where an MPiec controller is the scanner in EtherNet/IP communication across a Cisco 1800 router is shown below.
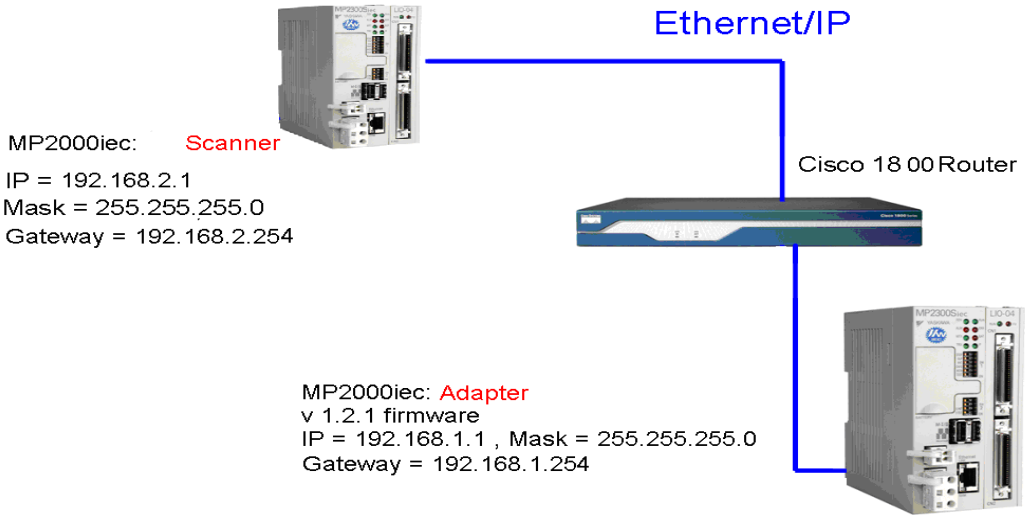

Figure 7: EtherNet/IP communication architecture across a Cisco router

Shown below is a screen shot of the configuration of the Yaskawa MPiec controller. The EtherNet/IP instances that are used to communicate with an adapter device are defined and the connection types are set to point to point in both directions.

Figure 8: MPiec scanner configuration