Ethernet Global Data Configuration Example

This document describes a simple point-to-point configuration for two RX3i PLCs to exchange 8 words of Ethernet Global Data each.

- The PLC targets are named *PLC_1* and *PLC_2*. They may reside in the same-, or in different Machine Edition projects.
- The Ethernet Interfaces in the two PLCs are configured with the following IP Addresses:
 PLC_1 = 192.168.1.151
  PLC_2 = 192.168.1.153

In the terminology of Ethernet Global Data, devices send (produce) 'unsolicited' data packets that can be received (consumed) by one or more other devices:

- Both PLCs use one EGD Produced Exchange to send 8 words of data from their Registers %R00001 to %R00008.
- And both PLCs use one Consumed Exchange to read the 8 words of data sent by the other PLC into their Registers %R00009 to %R00016.

Configuration Steps

1. Add EGD Components to PLC_1 and PLC_2

Add an EGD component to each target. Right click the target, select 'Add Component', then 'Ethernet Global Data'.
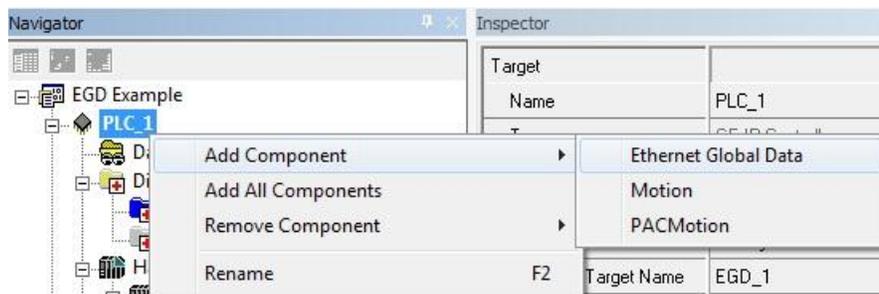

The EGD component must be added to PLC_1 and PLC_2.

2. Adjust the EGD Local Producer IDs in PLC_1 and PLC_2

EGD Parameters are specified as Properties in the Inspector Window. Right click the Ethernet Global Data node in Navigator and select 'Properties…' to open the Inspector.
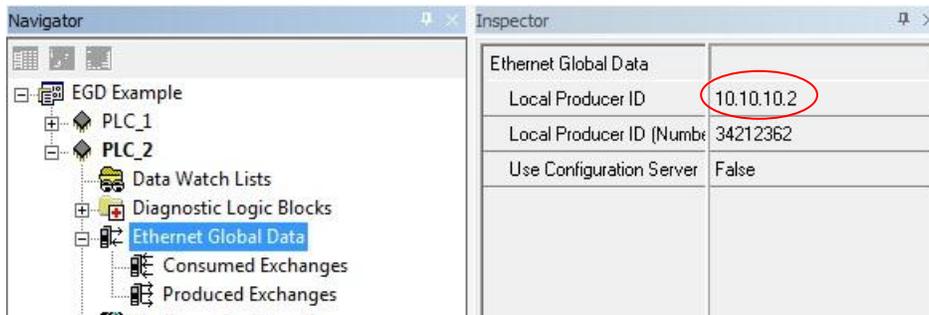
The **Local Producer ID** of each target can be any number in the format of an IP Address and must be unique on the network. It is used to identify exchanges from this target on other consumers.

Local Producer ID in PLC_1
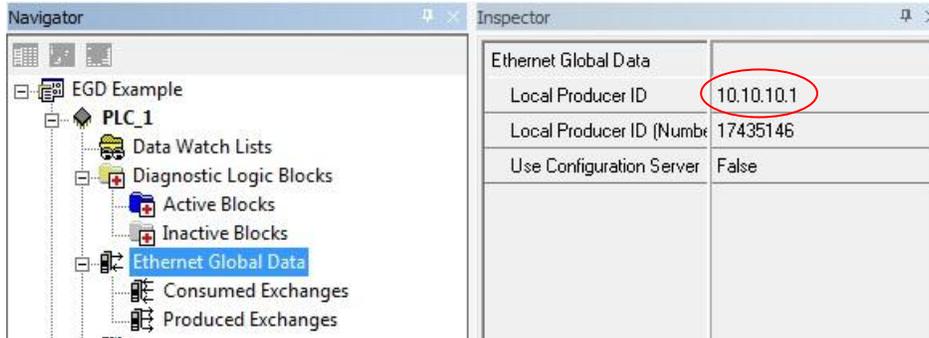
The Local Producer ID does not need to match any Ethernet Interface IP Address in the target.

Local Producer ID in PLC_2

## 3. Create a Produced Exchange in PLC_1

This exchange is to send 8 words of data to PLC_2. To create the exchange, right click the Produced Exchanges node and select 'New'. The new exchange can be named as appropriate for the application.
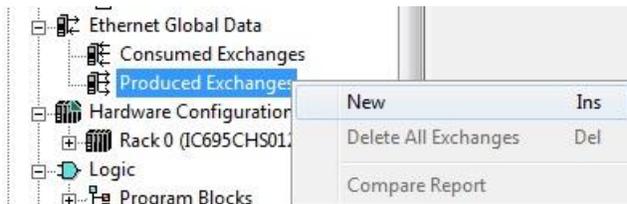
Consumed Exchanges are created the same way.

4. Adjust Exchange Parameters

Right click the new exchange and select 'Properties…' to open the Inspector and adjust exchange parameters.
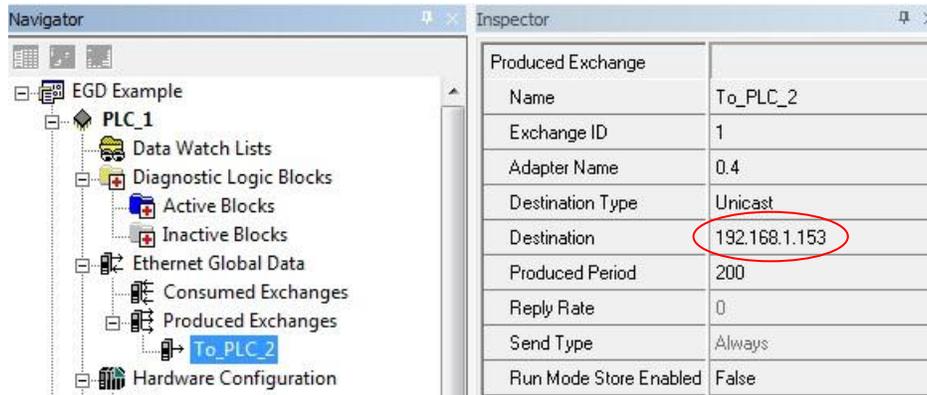
In this example, only **Destination** needs to be adjusted.
In Unicast mode, it is the IP Address of the Ethernet Interface that is to receive this exchange.

The **Produced Period** specifies how often the exchange is sent to the network. Default is every 200ms.

Note: The Produced Period should not be shorter than the actual PLC scan time.

If a target needs to send more than one Produced Exchange, each Produced Exchange must have a unique **Exchange ID**. The Exchange ID together with the Local Producer ID (see Step 2) is used to identify an exchange on other consumers.

If a target has more than one Ethernet Interface, the **Adapter Name** specifies which Interface is to send or receive the exchange.

5. Add a Produced Data Range to the Exchange

Double click the exchange to open the EGD Editor. Data Ranges can be added, inserted or deleted with the appropriate buttons. The example only uses one data range starting at %R00001 with a length of 8 words.
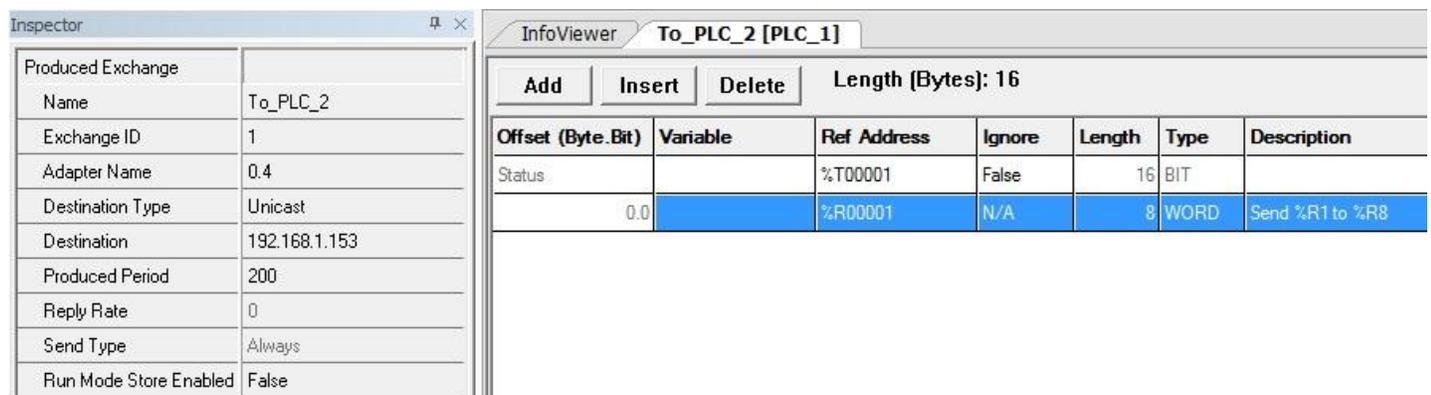
Note: The 16 status bits mapped to %T00001 are NOT part of the data that is sent with the exchange. The application can read this status word to verify whether the exchange is being sent properly.

6. Create the Produced Exchange in PLC_2

Repeat Steps 3 to 5 from above and create a Produced Exchange in PLC_2. The exchange also sends %R00001 to %R00008 and maps status to %T00001. Only difference, it is sent to the IP Address of the Ethernet Interface in PLC_1.

The complete exchange definition is shown below.

7. Add a Consumed Exchange in PLC_1

Right click the Consumed Exchanges node and create a new exchange to receive 8 data words from PLC_2. Adjust exchange parameters like shown.

The **Producer ID** must match the *Local Producer ID* of the PLC that has sent the exchange (see Step 2).
It is NOT the IP Address of the sending Ethernet Interface.

Producer ID and Exchange ID together identify an exchange.

The **Consumed Period** is not editable. The exchange will be received at the same period as the matching produced exchange is sent from PLC_2.

If no exchange is received within the **Update Timeout** period, the exchange status word reports an error (see Step 8 below). The application can read the exchange status to verify whether the expected data was received properly.
The Update Timeout should be set ~2 to 3 times the producer period of the matching produced exchange.

8. Add a Consumed Data Range

Double click the exchange created in Step 7 to open the EGD Editor. The exchange status word is mapped to %T00017. The 8 data words received from PLC_2 are mapped to %R00009.

Note: The status word is NOT part of the received data. The application can read the status word to verify proper (timely) reception of the exchange (see Step 7).

9. Create the Consumed Exchange in PLC_2

Repeat Steps 7 and 8 from above and create a consumed exchange in PLC_2. The exchange also receives data into %R00009 to %R00016 and maps status to %T00017. Only difference, the Producer ID is the one of PLC_1.

The complete exchange definition is shown below.

EGD Configuration is now complete.

Once in Run Mode, each PLC will automatically receive Registers %R1 to %R8 from the other PLC in its Registers %R9 to %R16.