Network Data Exchange Principles

This document describes the principles and functioning of the Network Data Exchange Protocol that is used by the Control Technology Inc (CTI) 2500P-ECC1 and 2500P-ACP1 cards. Although this document is mainly focused on the application of the 2500-ACP1 card, the principles remain valid for the 2500-ECC1 card too. It is worth mentioning that the Network Data Exchange can be used between a mix of ACP1 and ECC1 cards.

1 Simple Publish / Subscribe configuration

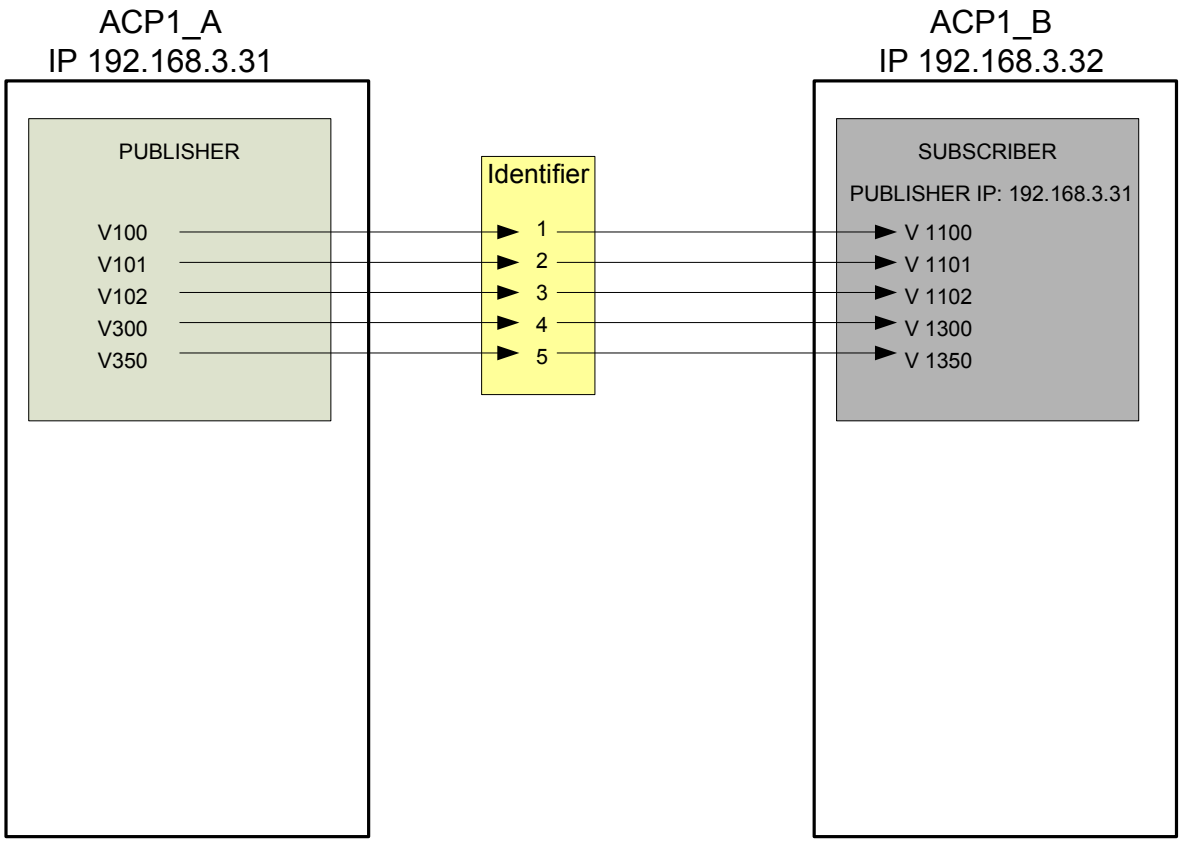


Figure 1

- The Publisher makes the data available on the network. Each variable is assigned a unique Identifier. An Identifier is an Integer number between 1 and 65535 that can be freely assigned by the user.
- The Subscriber connects to the Publisher by defining 2 parameters:
  1. the Publishers IP address
  2. the Identifiers from the items that he wants to receive.
- The subscriber has no access to the variable name or the PLC address in the Publisher. To the Subscriber, the only known identification of an item in the Publisher is the Identifier.
- The Subscriber links the Identifier to a variable and if desired to a PLC address in his own memory space. The subscriber can choose to which Identifiers to connect and is not required to connect to ALL the Published items.

- The change of value of a variable in the Publisher will trigger the transmission of that variable to the subscribers that have connected to the Identifier of that variable. This is an “On Event” data exchange mechanism. The Subscriber does not need to take any action to receive the actual data.
- In the Publisher rules can be applied to variables to trigger the Event Mechanism. For each Item a hysteresis can be configured in order to avoid unnecessary data exchange trigger events.

2 Both Devices Publisher / Subscriber

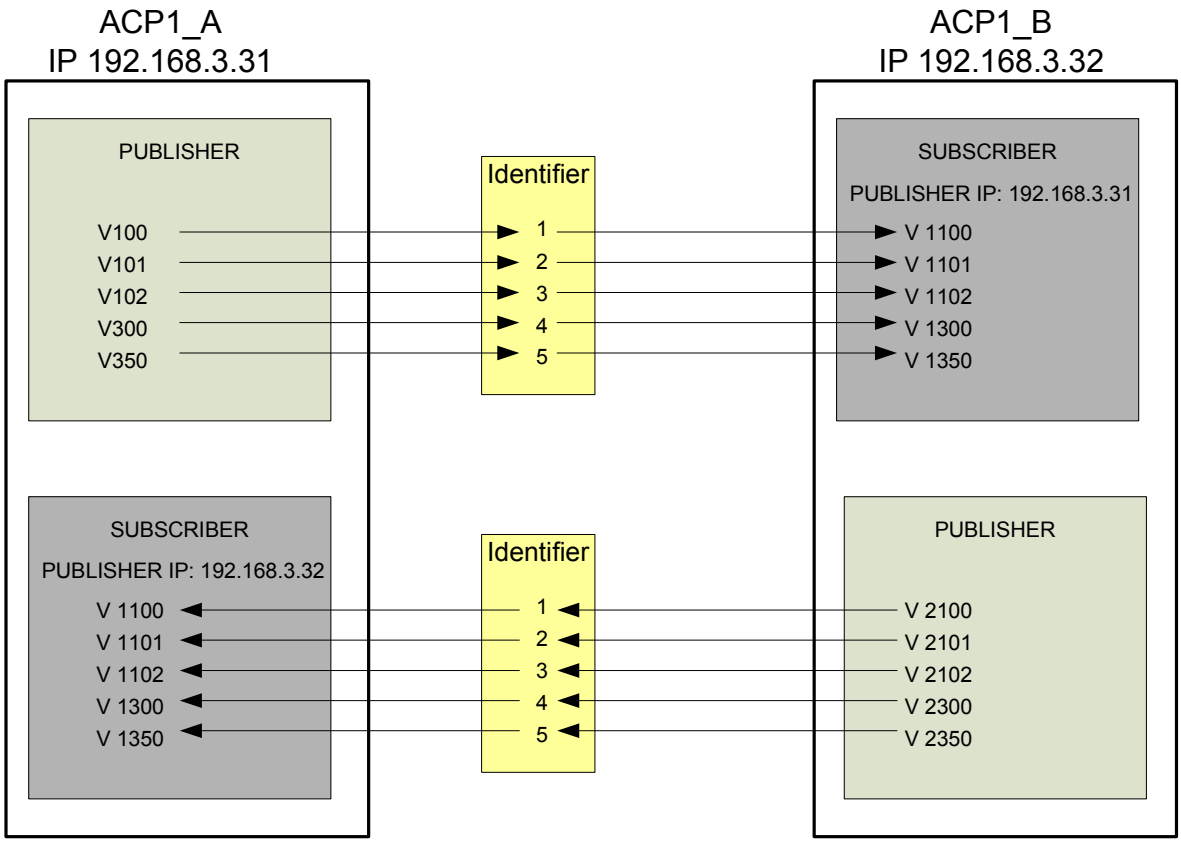
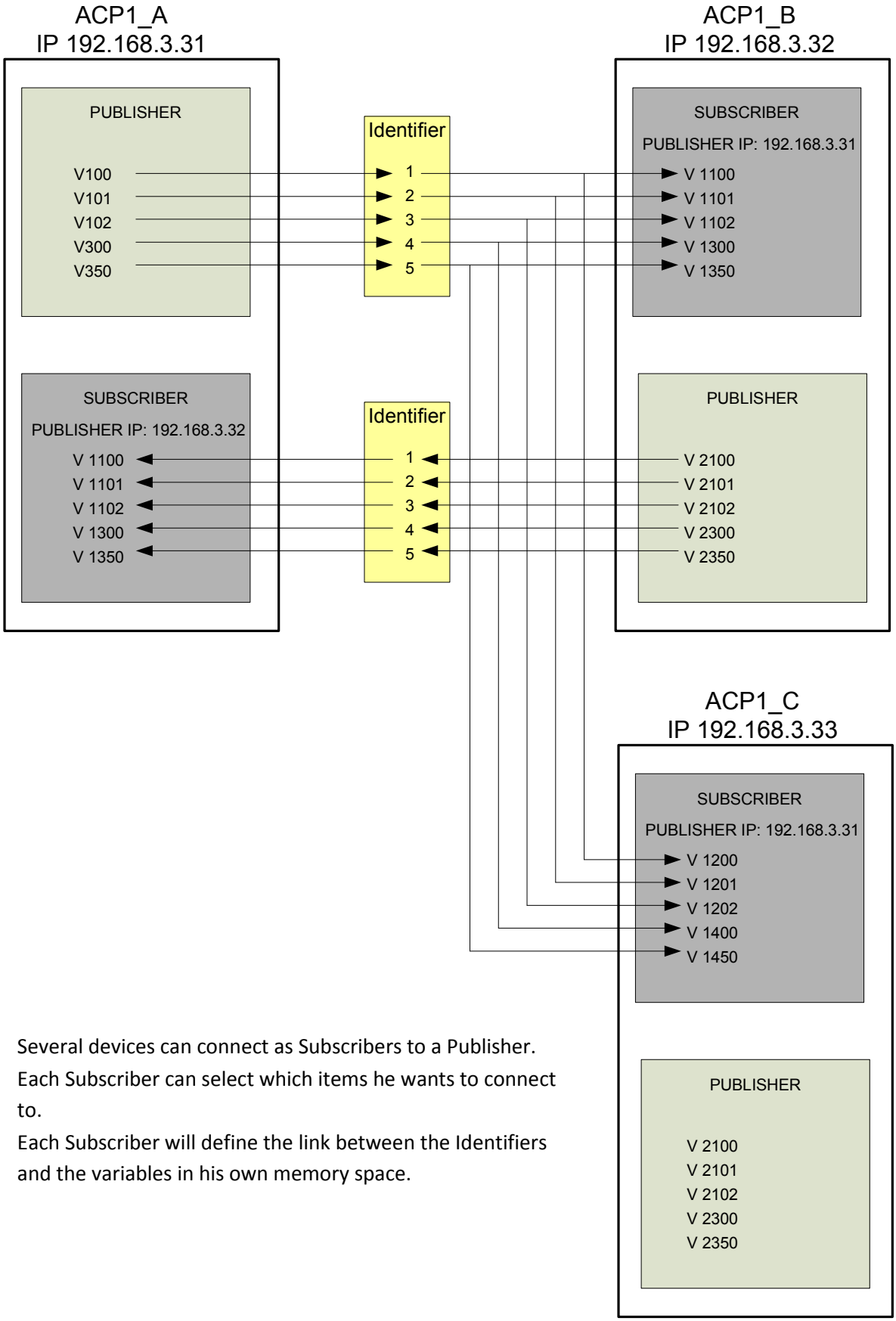


Figure 2

- A device can be Publisher and subscriber at the same time for another ACP1 card or ECC1 card.
- Several Publishers can use the same Identifiers. Within one Publisher each variable must have its unique Identifier.

3 A Publisher & multiple Subscribers



- Several devices can connect as Subscribers to a Publisher.
- Each Subscriber can select which items he wants to connect to.
- Each Subscriber will define the link between the Identifiers and the variables in his own memory space.

Figure 3

4 Multiple Publishers & Subscribers

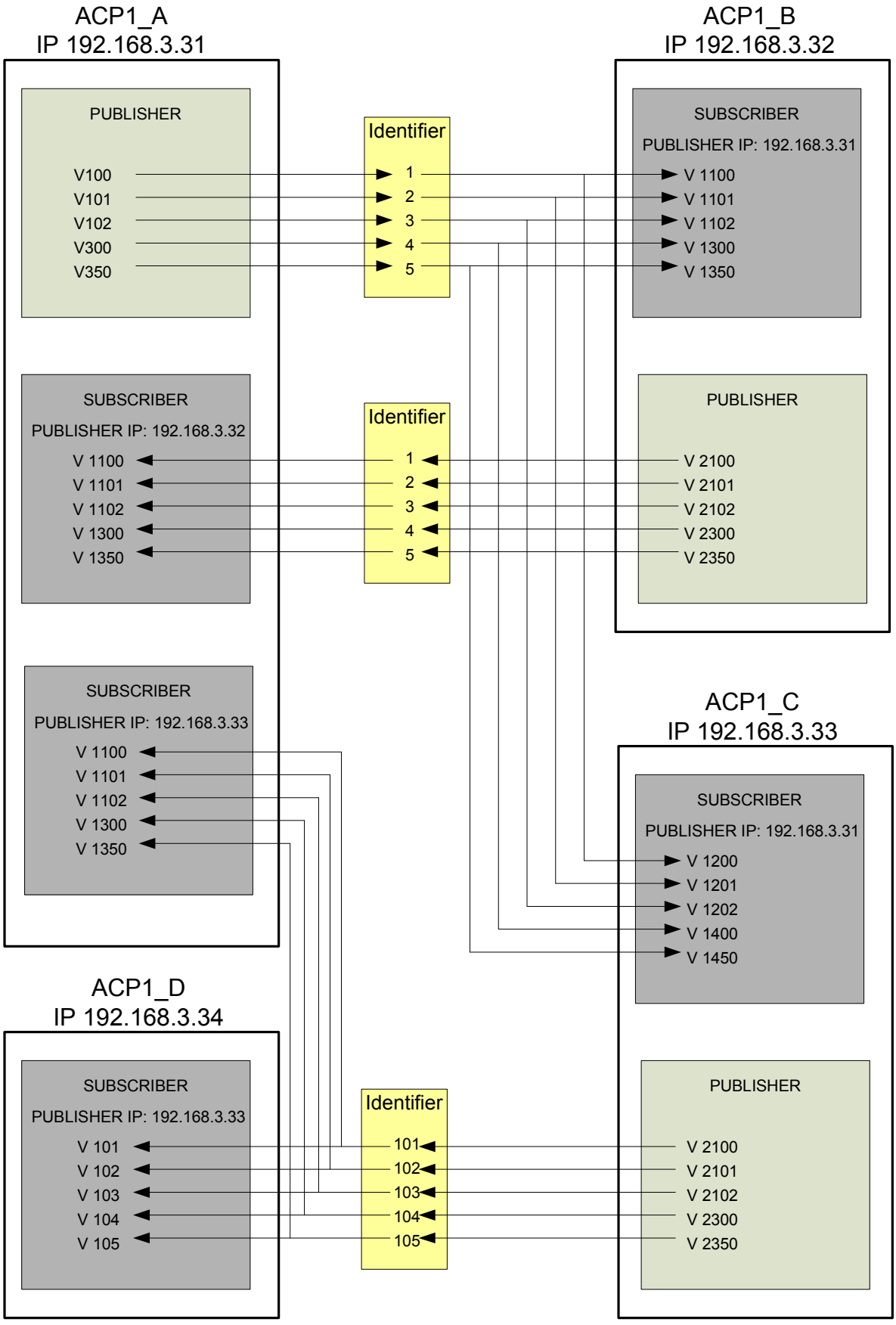


Figure 4

- Each device can be Publisher and can be Subscriber to multiple other devices.