

FieldServer Theory of Operation

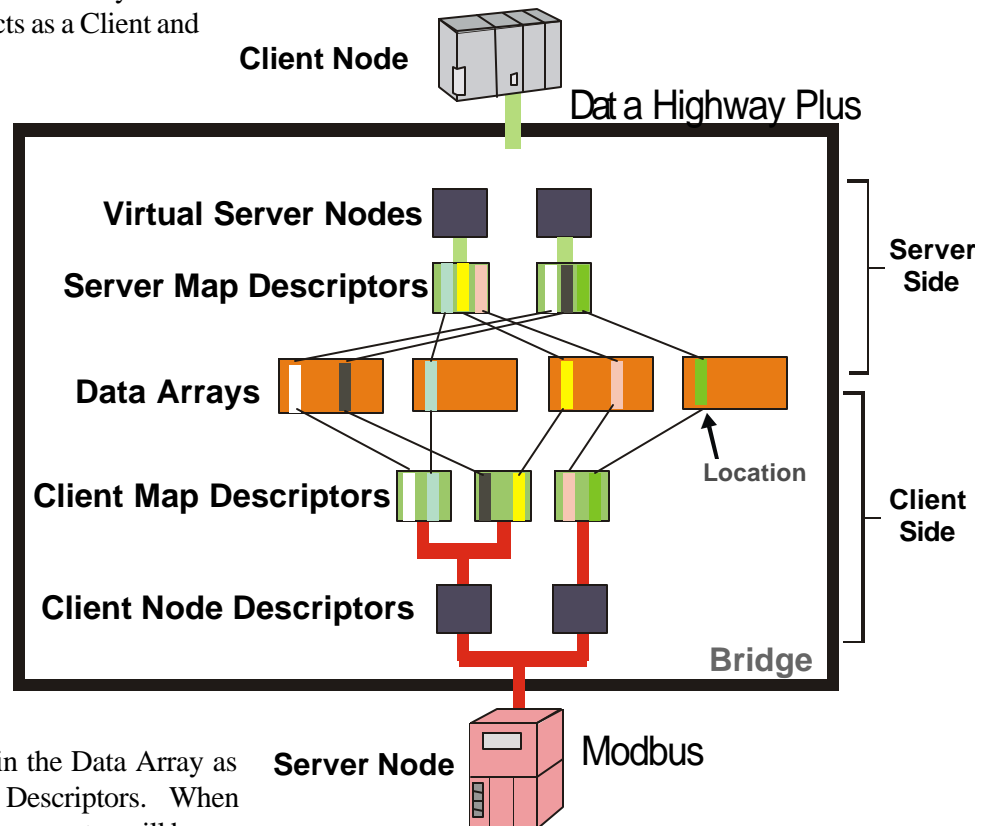
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The basic idea of the FieldServer is that it is a bridge between two or more different devices. These two devices can be using the same protocol or different protocols, or even different communication busses. As the data is fetched from a Server node by the FieldServer, it is stored in a Data Array at a specified location. The data is then accessible by a Client node at any time.

Realize that the FieldServer acts as a Client and a Server simultaneously.

The information is gathered by the “Client side” of the FieldServer from the Server nodes via a Comm Port (or Ethernet port or ISA slot). This information packet includes the desired data objects coupled with the protocol layers of the Server node (such as a PLC or RTU). Since the information packet coming in a single serial port could originate from one of several different nodes, the user can configure several different Client Node Descriptors to describe each of these nodes.

As the information packet enters the FieldServer it is put in the Data Array as indicated by the Client Map Descriptors. When configuring the FieldServer, the operator will be assigning where data is stored in the Data Array using Client Map Descriptors.



The Data Array is the holding area of the data in the FieldServer. There are nine different formats for data in the Data Arrays:

- | | |
|---------------------------|---------------------------|
| ■ Floating point | ■ 32 Bit unsigned integer |
| ■ Bit | ■ Packed bit |
| ■ 16 Bit signed integer | ■ Byte |
| ■ 16 Bit unsigned integer | ■ Packed Byte |
| ■ 32 Bit signed integer | ■ Swapped Byte |

The FieldServer can contain any number of Data Arrays, but each Data Array can only store data in one format. The user might wish to name one Data Array for PLC #1 and another Data Array for PLC#2, etc. Or the user can store high alarms in one Data Array and low alarms in another. The FieldServer is flexible enough to enable the user to configure the unit in any way that is meaningful to the user.

For example, a Modbus PLC might have a set of 10 high alarms in address 00001 to 00010. When the user configures the FieldServer, a map descriptor would be configured to fetch Data Objects from Modbus address 00001 length 10 and save this data to Data Array named PLC1, location 20. Now the high alarm for sensor number 5 on PLC1 is in Data Array PLC1, location 24 (the fifth location starting at offset 20).

If the user needs to make this information available to a DCS using Allen Bradley DH+ protocol the DH+ system can be configured to access the FieldServer for the information about that sensor from the Data Array. The FieldServer in this case is acting as a Server to the DCS Client. It will appear to the DCS as another DH+ PLC. Since the FieldServer appears to be an Allen Bradley PLC, it is known as a Virtual Server Node. The user configures the Virtual Server Node via a Server Node Descriptor and a Server Map Descriptor. For example, the user might configure the Virtual Node PLC1 to contain the data on sensor 5/PLC1 as a DH+ address B3:57. And the data needed for address B3:57 is retrieved from Data Array PLC1, location 24.

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