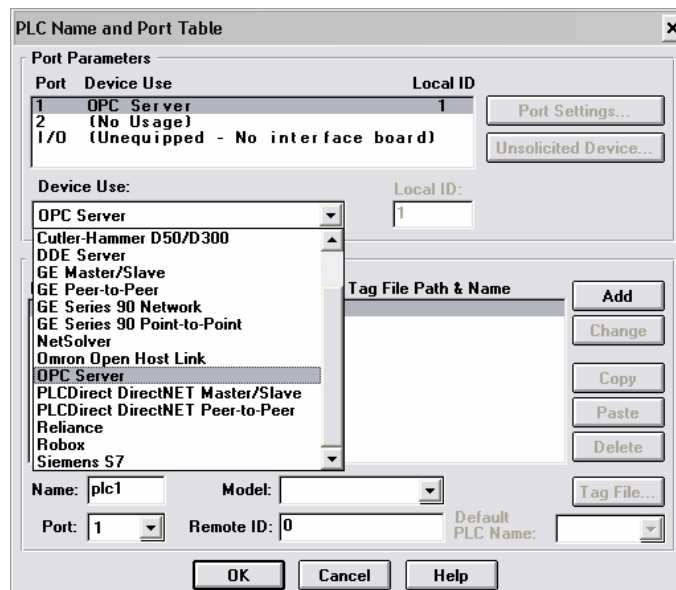


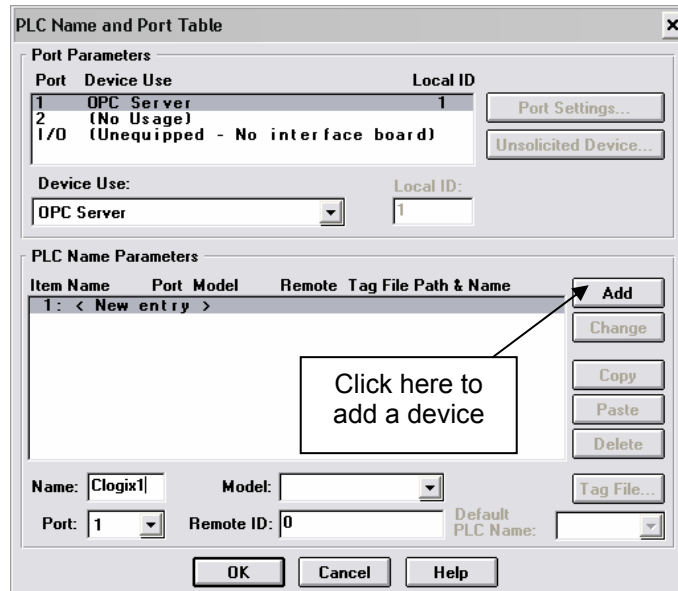
Configuration of Kepware OPC Server in PanelMate Configuration Editor

Configuration of the Kepware OPC Server is done in the PLC Name & Port Table of the desired PanelMate configuration. First select the port to use, 1, 2, or I/O. The port used has no bearing on what physical connection is actually used to connect the ePro to the PLC or PLC network. Since an OPC Client/Server exchange is a logical connection between two different software components it is independent of any hardware/physical connection. The actual physical connection (Eg. serial, Ethernet, or I/O card) is only known by the OPC Server so the PanelMate OPC client doesn't actually use the port assignment in the PLC Name & Port table. The port assignment is only used to differentiate between devices (shown in the *PLC Name Parameters* section of the Name & Port Table) that use native drivers (which are actually assigned to a physical serial or I/O connection) and devices that use OPC drivers when using both native and OPC communications. To assign an OPC Server to a port, select the port with a mouse click and use the "Driver Use" pull-down menu to choose "OPC Server". Port 1 is used in the example shown below.

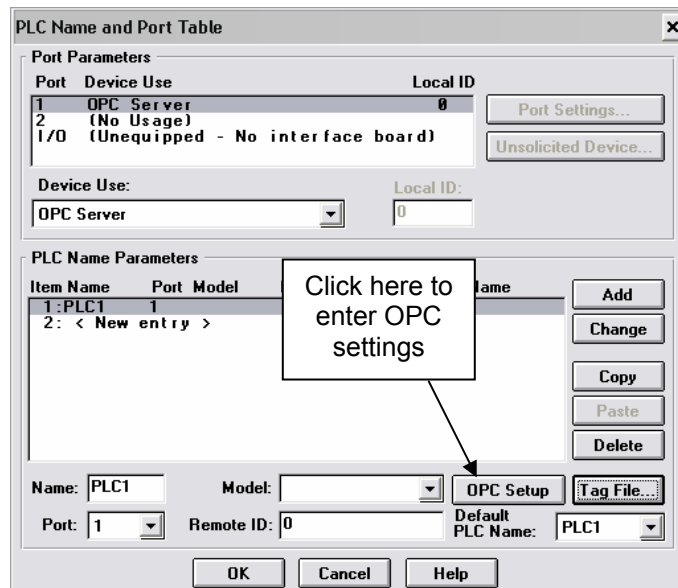


Next, fill out a PLC Name in the PLC Name Parameters section, select the port to the one assigned to as OPC Server, and select a unique Remote ID (Model selection has no meaning in an OPC connection). The Remote ID must be unique when using multiple PLC Names assigned to an OPC server connection. The Remote ID has no bearing on any "network address" other than to distinguish one OPC device from another within PanelMate's internal logical connection mechanism. All physical network addressing (Eg. DH+ node, TCP/IP address) is defined within the OPC server, and in the case of Kepware, that address is defined in the OPC configuration process when a Device is created and assigned to a communication Channel.

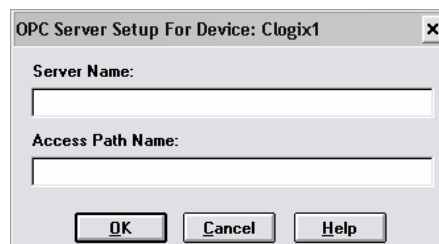
In the example shown below a device named Clogix1, remote ID 0, Port 1(OPC server port) has been selected. Once these 3 fields are defined click on the "Add" button as shown:



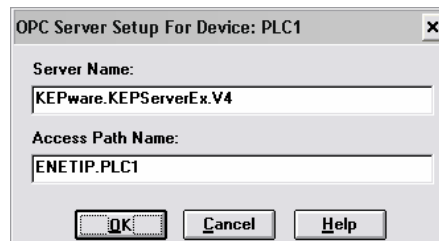
Once the device is added to the table, select that device entry with a mouse click. Once selected a button labeled “OPC Setup” will appear in the bottom left area of the dialog box (next to the “Tag File...” button) as shown below. Click on that button to configure the OPC properties of that device.



The OPC Server Setup dialog box will pop-up as shown below. In the dialog box the OPC Server Name and Access Path need to be specified in order to create the logical connection between the PanelMate device name (Clogix1 in this example) to the Kepware channel and device (EnetIP.PLC1 in this example).



Each OPC server name is unique and in the case of Kepware the server name is “Kepware.KepserverEx.V4” (upper or lower case character doesn’t matter, “kepware.kepserverex.v4” is okay too, but the spelling, along with periods before and after “KepserverEx” is critical for successful operation). The access path depends on configuration of the server. In the case of Kepware the Access Path Name is equal to the Channel name and Device name created in the Kepserver separated by a period. In this example it is “**ENETIP.PLC1**”. Type in the information in the dialog box as shown below and click on “OK”.



If you have additional OPC servers or additional PLC’s to connect, create additional devices in the PLC Name Parameters section in the same manner. Since each device has a unique OPC Setup (Server Name and Access Path Name) multiple OPC servers, or multiple devices attached to a single OPC server can be accommodated from a single OPC Server entry in the top half of the PLC Name & Port Table. The only limit is the number of devices (32 max) that can be configured in the PLC Name Parameters section.

Once all the devices are configured, click on the “OK” button at the bottom of the PLC Name and Port Table dialog box.

OPC Device Addressing within the PanelMate Configuration Editor

All addressing syntax checking is the responsibility of the OPC Server. The way it works is the OPC client requests a data item by “name”, the OPC server validates that the data item is valid and returns the value of the data item, it’s quality (good, bad, unknown, etc.) and the data type (long, short, float/real, boolean, etc) of the data item so that the OPC client knows how to interpret the value supplied by the server (note: it is possible for the client to specify the data type in the request, PanelMate leaves it to the server to supply the data type). Because of this, the PanelMate editor does no syntax checking of addresses within the editor. This means that all address references in the PanelMate editor must match the syntax rules of the OPC server. In the case of Kepware this usually matches typical PLC addresses that PanelMate users have been familiar with when using our native AB, Modicon, GE, etc. PLC drivers on the PanelMate proprietary platforms (Power Pro, Power Series, Common Platform). There are some cases, however, where either the syntax or the default data type may differ from that used by PanelMate’s native drivers. For example in Kepware’s Modicon driver suite all references to internal coils (00000 through 09999) must include leading zeros where PanelMate’s native driver did not. The default type for some of Kepware’s 16 bit (word) data types is unsigned where PanelMate’s corresponding references would be signed 16-bit. In these cases you must adjust your configuration to use Kepware’s driver syntax and data types. In the configuration of the Kepserver you may also create tags that override Kepware’s default data type selection. For example, In the case of Modicon registers used for floating point storage you could create a tag in Kepware’s configuration editor name F40320 that reads register 40320 as a floating point value. This would cause the Kepware OPC server to

read both register 40320 and 40321 and convert it to floating point before passing the value to PanelMate's OPC client. In the PanelMate editor you would simply use the reference **[F40320]**.

When multiple devices are defined in the PLC Name Parameters section of the PLC Name & Port Table the addressing syntax remains the same as always, where the device name is placed in front of the address separated by a comma. For example, if a second device "PLC2" is defined, a tag from that device would be specified as **[PLC2,tagname]**.

OPC Client/Server Online Operation

When a PanelMate PC Pro or ePro configuration that uses an OPC client/server connection starts up all referenced OPC servers are automatically started at the beginning of the load process when loading the PLC Name & Port Table. After all other configuration components are loaded (messages, symbols, pages, etc.) PanelMate creates OPC groups within each OPC server. This takes place while the prompt "Creating Block Reads" is displayed. A different OPC group is created for each configured page in the application (Page0, Page1, Page2, Page NNN) and each group is populated by the data items (i.e. tags, or addresses) that are referenced by each page. OPC groups will also be created for all Alarm, Message, or Trend OPC references if alarms, messages (with embedded data references), or trends (trend templates, not TrendLink on ePro XE models) are configured in the application.

After all OPC groups are created in the OPC server the OPC groups Alarming, Messaging, and Trending are activated along with the OPC Page group for the startup page. From then on the background groups (alarms, trends, messages) remain active until PanelMate ePro runtime is stopped. The individual page groups are activated and de-activated within the OPC server by the PanelMate runtime software whenever the operator changes pages. So at any one time the only page group that is active is for the currently selected page.

The OPC server is responsible for determining how best to request data from the PLC based on what data items are being requested by an OPC client or multiple clients. Therefore, the role of determining how to "block" data to optimize communications efficiency is the role of the OPC server. The data update rate of the OPC server is determined by three things. First, there is the minimum update rate supported by the server, usually in the 50-millisecond range. Second is the physical response of the PLC and network. The amount of network traffic, the bandwidth of the network, and the efficiency of the PLC in responding to communication requests all play into this equation. Finally, the update rate configured for each OPC tag or group represents the maximum data rate requested by the OPC client. When PanelMate creates an OPC group it assigns the group update rate based on the values set in the configuration's "System Parameters" Communications tab. The Screen, Alarm, Message, and Trend scan delays configured there are used as the group update rate when creating the page, alarm, message, and trend OPC groups. The OPC server will update a data item based on the fastest update requested if a data item appears in more than one active OPC group. The example below shows settings of 0.10, 0.50, 5.00, and 10.00 seconds for the four groups:

System Parameters

General Password Communications Remote

Scan Delays in Seconds

Screen: 0.10

Alarm: 0.50

Message: 5.00

Trend: 10.00

☐ Retry Delay

☐ Bit Zero After Com Fault

☐ Fault Relay Deenergize on Alarm

OK Cancel Help

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