PanelMate ePro PS Classic Application Note

for new RoHS ePro PS Classic models

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Agenda

- Overview of PanelMate ePro PS
  - What is “Protect Mode Save” and why is it important
- How Kepware works for PLC communications
- How ePro PS starts up and launches the application
- Step by Step process for converting an application and loading an ePro PS Classic
- Troubleshooting communications and startup problems.
- Reloading a unit to original factory settings (for catastrophic recovery)

PanelMate ePro Protect Mode

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PanelMate® ePro PS
Enhanced Protect Mode – A Unique Advantage

- Exclusive Protect Mode Capability
  - Always enabled
  - Completely protects entire operating system, system settings, and programs from modification
  - Eliminates common headaches from use of Microsoft based PC platforms in industrial applications:
    - Corruption from unplanned power loss
    - Corruption from virus or worm attacks
    - Poor performance from fragmented disk files
    - Unwanted or unexpected software changes
    - Problems from unwanted cookies, temporary files, automatic installation of ActiveX controls, etc.

Eliminating these issues reduces installation and maintenance costs and eliminates process downtime!

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PanelMate® ePro PS
Enhanced Protect Mode – A Unique Advantage

- Protect Mode - How does it work?
  - At the operating system level any process which attempts to write to the Windows drive (C:\) is actually re-directed to volatile RAM memory
  - The operating system “fools” the application or process, making it appear as if the write has taken place
  - Once the system re-boots or goes through a power cycle, RAM is cleared and the system is left unchanged

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PanelMate® ePro PS
Enhanced Protect Mode – A Unique Advantage

- Protect Mode - How do I install software or make changes to the Windows drive, such as touchscreen calibration settings, IP address, time, or installing a 3rd party software package such as UltraVNC?
  - After a fresh reboot, make the changes as you would normally do on a standard Windows PC
  - Before re-booting the ePro PS, run the “Protect Mode Save” utility (Start > Programs > ePro Manager – select Protect Mode Save tab – click on “Commit”)
  - Once you click OK on the Commit button the system will go through a shutdown sequence during which time the system writes all pending changes from RAM to the C:\ drive, then reboots
  - After the reboot the system is again automatically running in Protect Mode

PanelMate® ePro PS
Enhanced Protect Mode – A Unique Advantage

- Protect Mode - What do I do if I somehow corrupt the Windows C:\ drive (through loss of power during a Protect Mode Save operation or if I cannot remove “bad” software I saved). Can I restore the ePro unit to original factory settings?
  - Restore Kits are available for you to purchase that include a CompactFlash module which has the original OS image of the internal drive and USB flash drive with a Linux operating system and restore utility. The kit comes with step by step instructions for doing a restore of the ePro
  - You’ll need a USB keyboard and mouse to perform the restore operation and you’ll be able to completely restore the unit in less than 15 minutes

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KEPServer_ePro OPC Communications Overview

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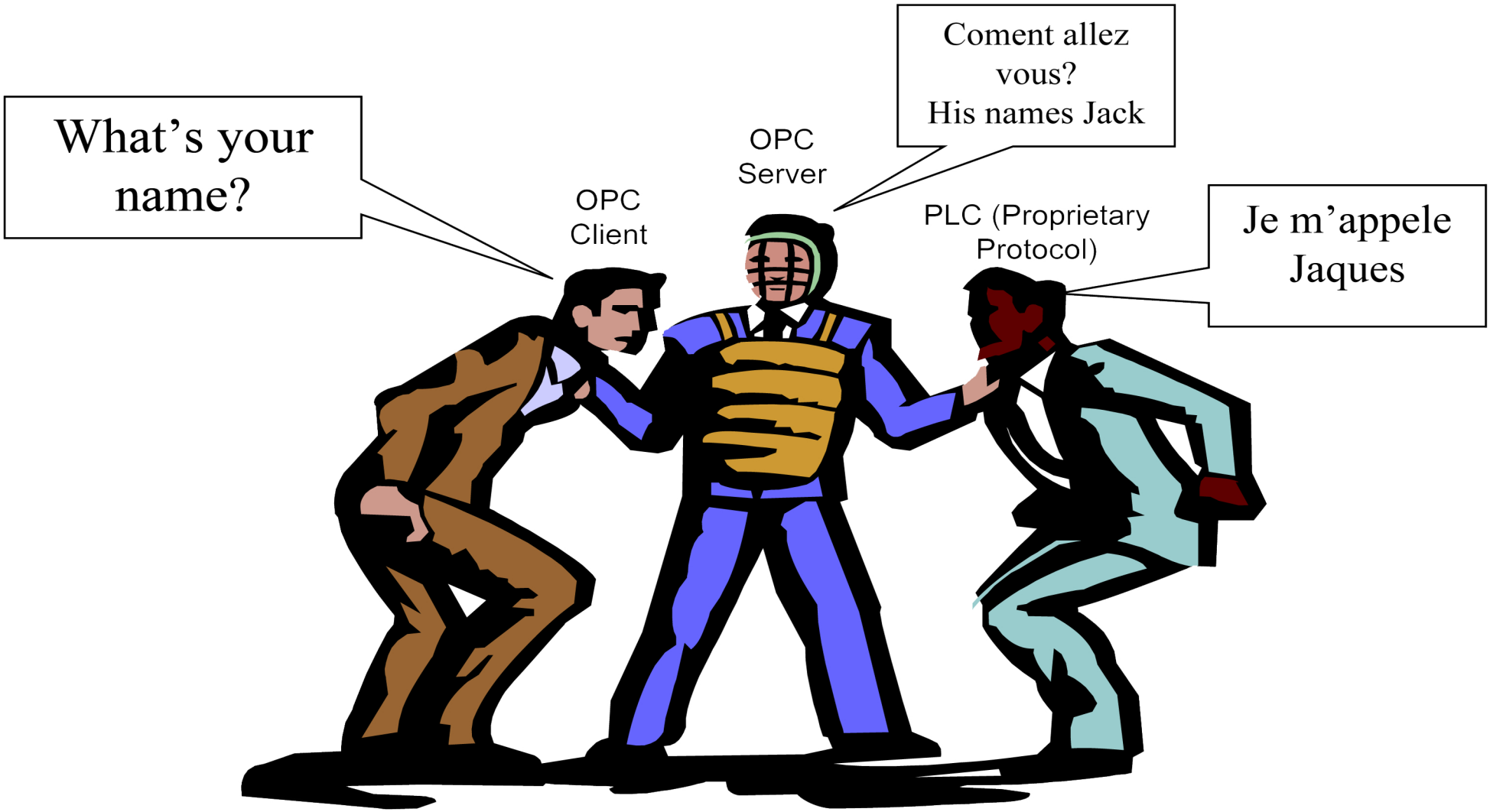
The History of OPC

- OPC (*OLE (Object Linking & Embedding) for Process and Control*)
- Started in 1995 by a group of vendors forming what is now known as the OPC Foundation
- Goal of developing a single client/server specification that would allow any vendor to develop software and applications that could share data in a fast, robust fashion
- The first specification, called Data Access Specification 1.0a -- released in early 1996 -- established a set of standard OLE/COM interface protocols (intending to foster greater interoperability between automation/control applications, field systems/devices, and business/office applications in the process control industry)
- A major goal of the OPC Foundation and the Data Access specification was to eliminate the need of client application vendors to develop their own ***proprietary*** set of communications drivers.
- Nearly 400 members from around the world
- www.opcfoundation.org

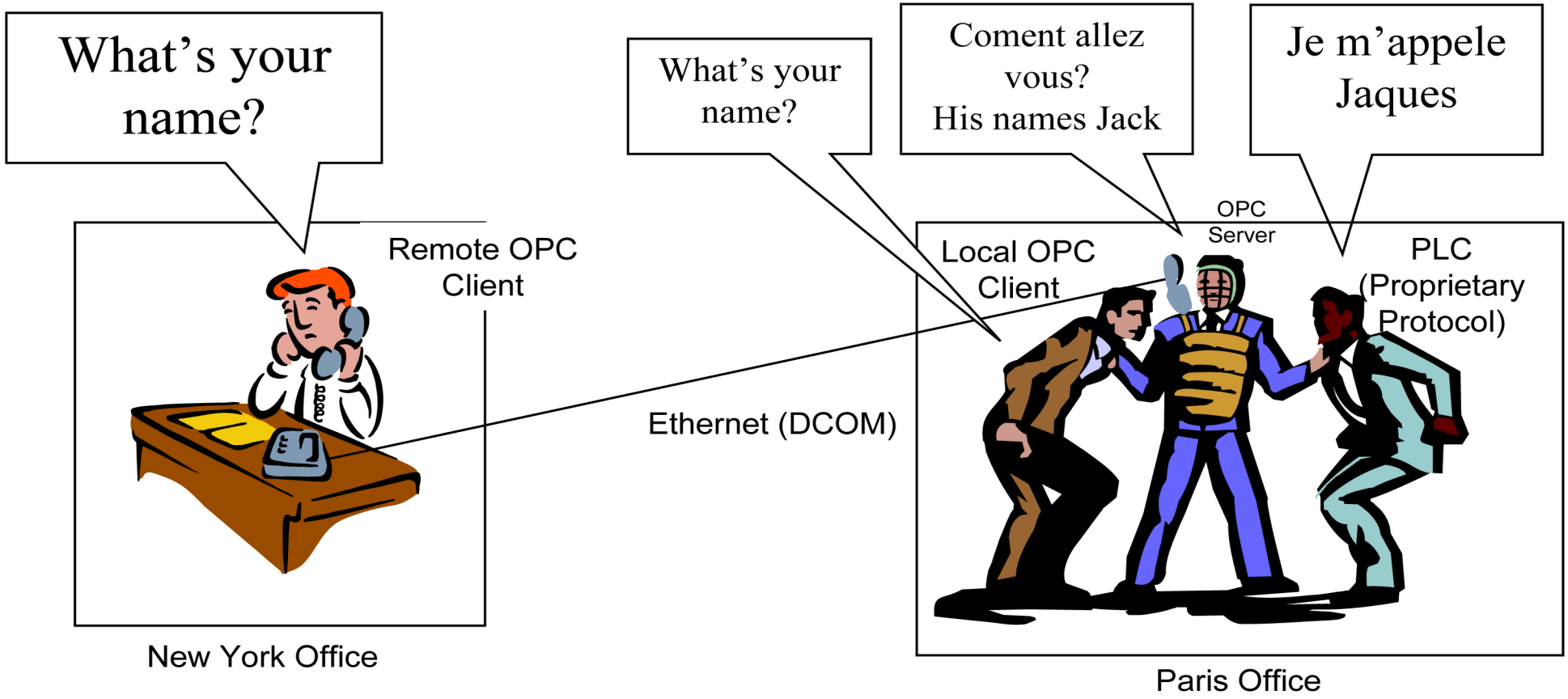
What is OPC?

- Fundamentally it is a way for two programs to exchange information/data
- One program is a client the other program is a server
- The client only needs to “speak” OPC-ese
- The server needs to speak the native protocol of the communicating device (i.e. PLC) as well as OPC-ese

How Does OPC Work?



How Does OPC Work?



KEPServer_ePro Terminology

- A ***Channel*** represents a channel of communication which defines:
  - Communications Protocol to use
  - Communications “port” to use
  - Communications settings
- A ***Device*** represents the PLC which communicates on the Channel and defines
  - Address of device
  - Comm. error reporting parameters
  - Available tags or addresses

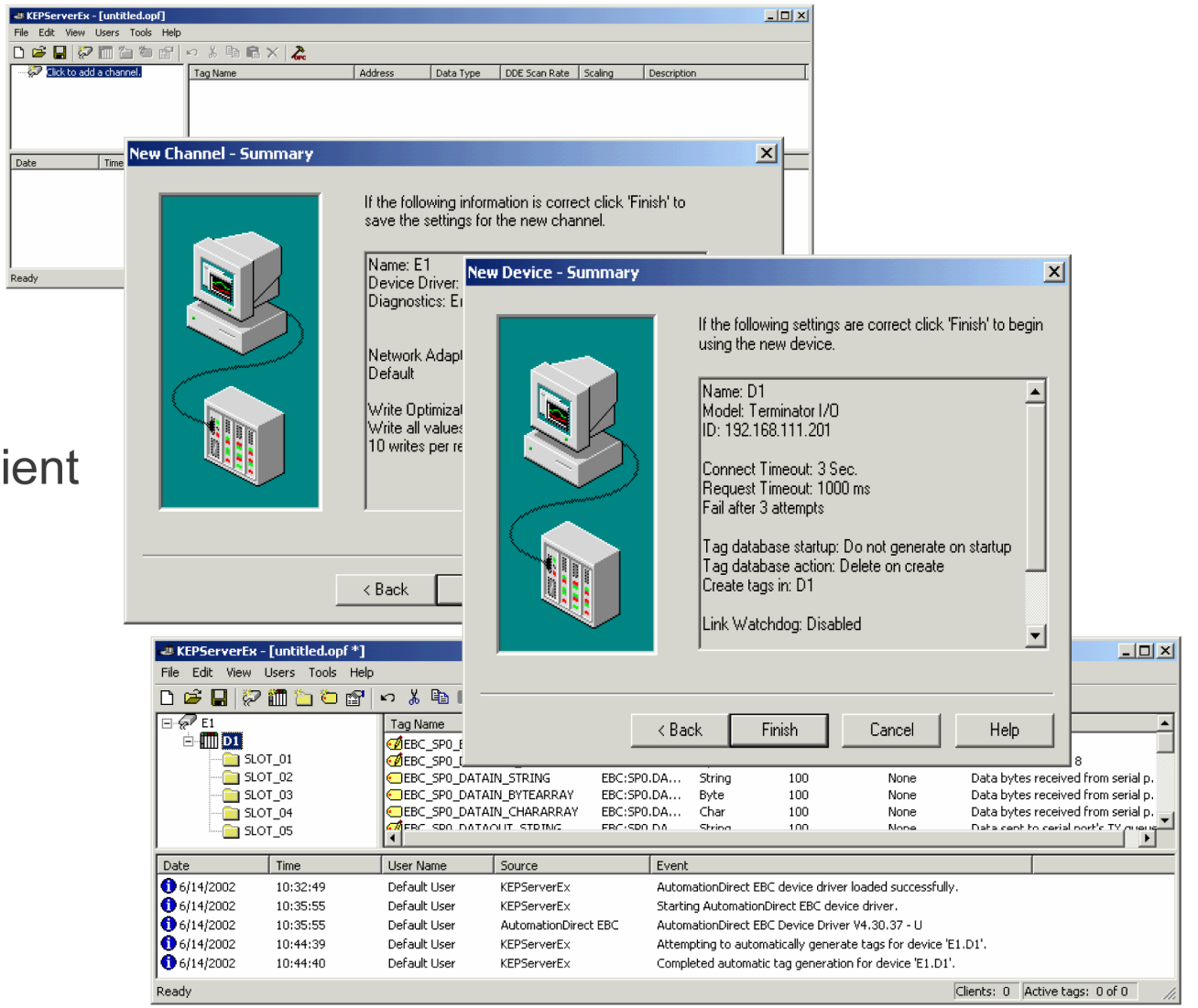
KEPServer_ePro Terminology

- A ***Tag*** or ***Address*** is defined as:
  - *ChannelName.DeviceName.XXXXX*
- An ***Access Path*** can be used to shorten the tag name:
  - In above example if you define the Access Path to be *ChannelName.DeviceName* then the tag is just *XXXXX*

Kepware Server Configuration

6 Steps and running!

- Start the Server
- Create a channel
- Create a Device
- Add Tags
- Save the project
- Launch OPC Quick Client



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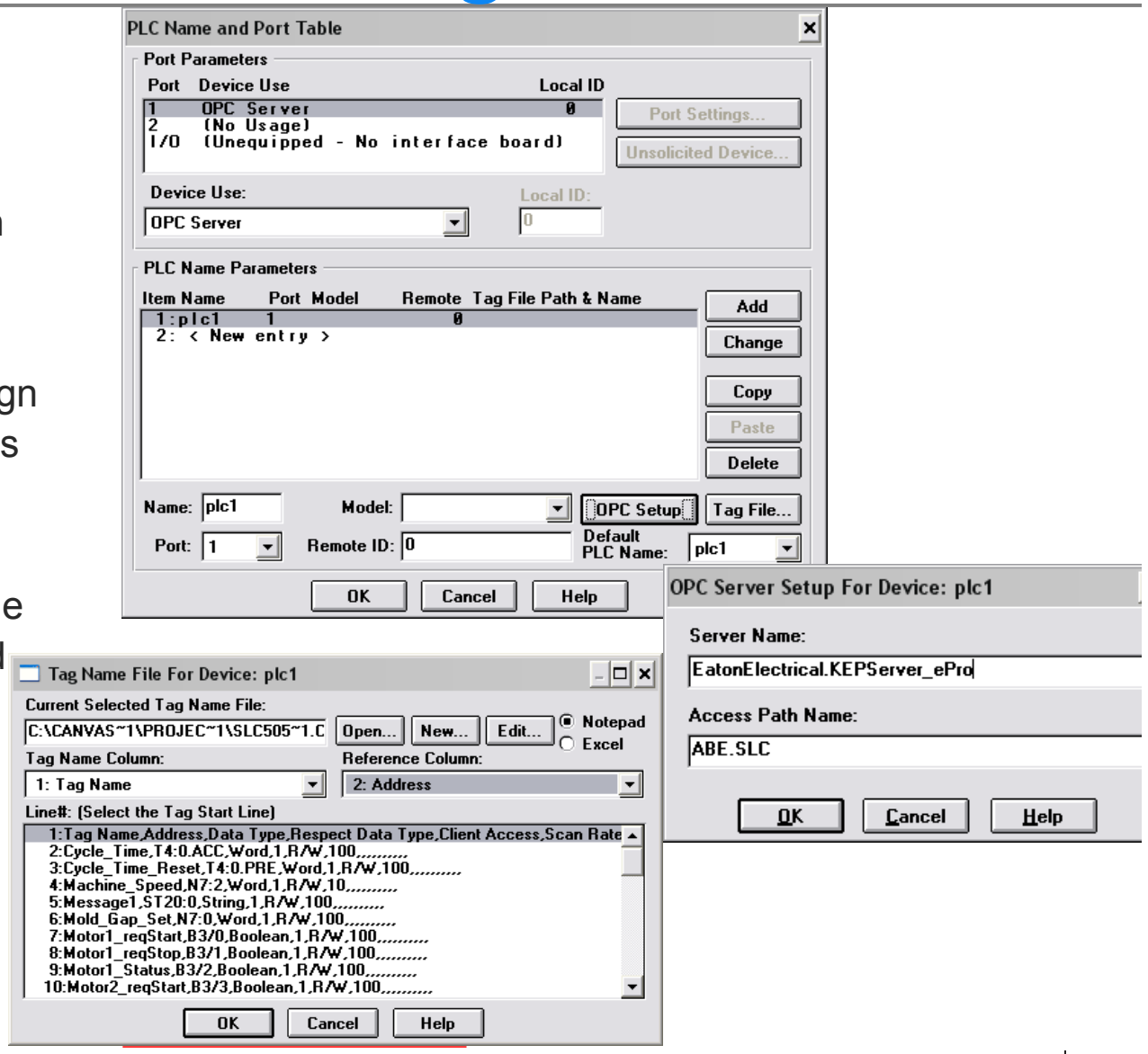
Addressing differences between KEPServer_ePro & Power Pro

- For SLC 500 applications, if you are referencing local I/O addresses you **must** fill out the I/O Slot configuration for the PLC in the Device properties.
- For SLC 500 serial (DF1) driver PanelMate always used BCC error checking. With KEPServer_ePro you choose between BCC and CRC.
- If using non default data types that required casting operators in PanelMate (Eg. Modicon Floating Point values with #FP, any String values with #ASC20, etc.) you must create a tag in KEPServer_ePro to represent the address and assign the correct data type to the tag. Then change PanelMate's address to refer to the KEPServer_ePro tag (Eg. [plc1,tag])
- Remember, KEPServer_ePro's address syntax overrules Power Pro syntax – most drivers are identical, but if in doubt refer to KEPServer_ePro's driver help files to make sure.

PanelMate Client Configuration

- In PLC Name & Port Table select OPC Server for any port (it doesn't matter which one)
- Add a PLC to that port
- Click on OPC Setup to assign the server name and Access Path Name to the PLC
- Optionally, click on Tag File … and browse for the tag file exported from Kepware and select the tag and address columns



How ePro PS starts up and launches the application

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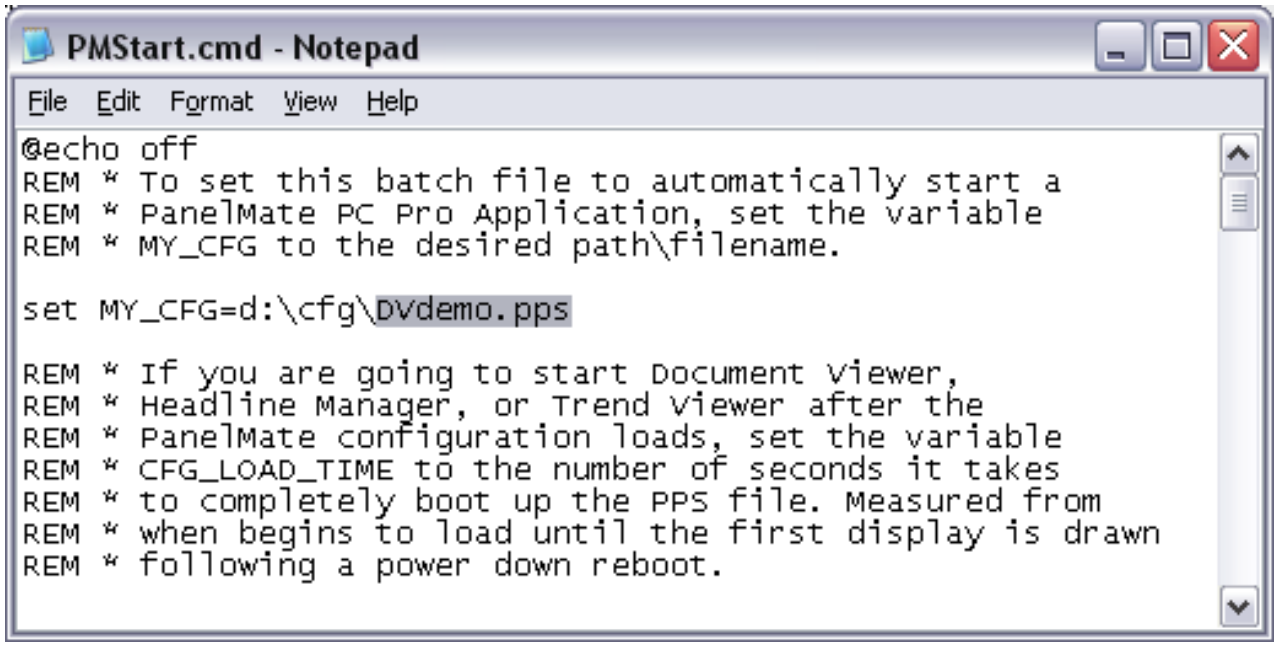
How Does ePro Start Up the PanelMate Application

- At boot up the file *PMStart.cmd* executes
  - Located in D:\
  - Runs PPS file referenced as *MyCfg =*
  - When PPS file launches it will launch the OPC server



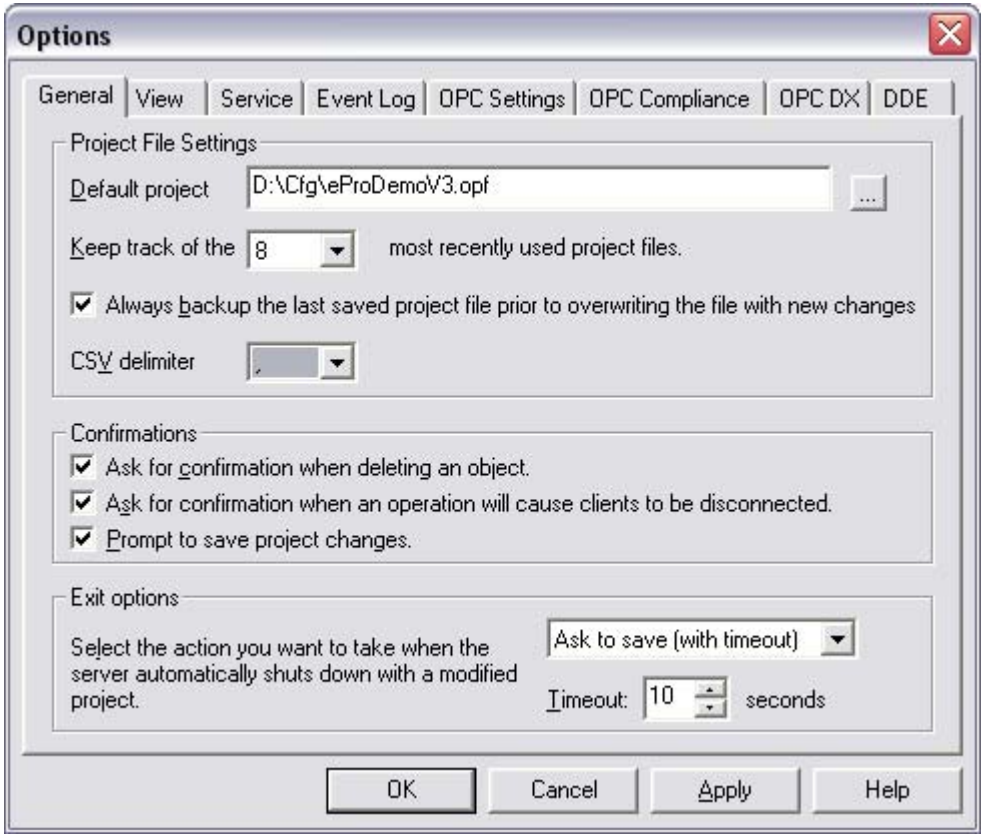
How Does ePro Start Up the PanelMate Application

- At boot up the file *PMStart.cmd* executes
  - Located in D:\
  - Runs PPS file referenced as *MyCfg =*
  - When PPS file launches it will launch the KEPServer_ePro OPC server
- KEPServer_ePro will launch one of two .OPF files (driver configuration files)

How Does ePro Start Up the PanelMate Application (cont.)

Kepware will launch one of two .OPF files (driver configuration files)

- If an OPF file is referenced in “Tools>Options”, General tab, Default project – then that OPF file will run.
- If no Default project – then the last opened OPF file will load
- This setting is saved to the *ServerMain.ini* file located in “C:\Program Files\KEPServer_ePro”



So, a Protect Mode Save operation is required to save the name of the OPF file to open!

Converting an application and loading an ePro PS Classic

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PanelMate Power Pro Conversion

1. Import .PPS file to PanelMate Power Pro editor ("File > Import")
2. Convert the Model to PanelMate PC Pro ("File > Convert")
3. Convert communications setup from PLC Name & Port Table to KEPServer_ePro
   - Convert PanelMate driver to OPC Server
4. Export to new .PPS file name ("File > Export)
   - **Note: Do not use** "File > Export As" which strips off OPC configuration information from the file

PanelMate Power Pro Conversion

5. Load new .PPS and .OPF files to the ePro PS unit to “D:\Cfg” directory
6. Edit D:\PMStart.cmd and point *MyCfg* = to the PPS file
7. Install KEPServer_ePro on the ePro PS unit, choose Modify from Upgrade, Modify, Remove selection and select the correct driver from the driver list to install. (copy install CD to USB memory stick)
8. Open KEPServer_ePro and set the *Default project* to the new OPF file.

PanelMate Power Pro Conversion

9. Perform a *Protect Mode Save* operation
   - *"Start > Programs > ePro Manager – select Protect Mode Save tab – click on "Commit"*
10. Connect communications cable (need male → female 9 pin adapter for serial cable)
11. Go on line, should be automatic after the Protect Mode Save operation, and debug

Troubleshooting communications and startup problems

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Troubleshooting communications and startup problems

- Symptom: No data is showing up and you are **not** getting communications errors.
- Possible Causes
  - The OPC Setup information was not entered correctly in the PLC Name and Port Table
    - Check that the OPC Server name is:

      EatonElectrical.KEPServer_ePro
    - Make sure the access path is spelled correctly
  - The “Export As” function was used for the PPS file generation instead of just “Export”. This strips out any OPC setup entries.

Troubleshooting communications and startup problems

- Symptom: No data is showing up and you are **not** getting communications errors (cont.)
- Possible Causes
  - The OPC Server is not installed on the ePro PS unit or the correct driver or drivers was not installed.
  - The OPC Server has the wrong default project selected
    - Open KEPServer_ePro and verify that your OPF file will open and that it is the default project
    - Remember to do a Protect Mode Save if the default project is changed or if a the OPC server or driver is updated or installed

Troubleshooting communications and startup problems

- Symptom: No data is showing up and you **are** getting communications errors.
- Possible Causes – Improper cable, port, or KEPServer_ePro setup
  - Check KEPServer_ePro to verify you are using the correct serial port on the ePro PS
  - Make sure the cable pinouts are correct – see the KEPServer_ePro driver help file for cable pinouts (may not be the same as the Power Pro with a male → female gender changer)
  - Check KEPServer_ePro setup and verify all settings, then test with their OPC Quick Client and verify that data quality is good for the PLC's access path (_System paths will always show good data). If no tags are configured create tags in the Quick Client to read known good addresses. If KEPServer_ePro's Quick Client cannot read data from the PLC neither will PanelMate

Troubleshooting communications and startup problems

- Symptom: Some data is showing up but you are getting communications errors on some of the addresses
- Possible Causes – Improper Slot configuration or non-default data format casting operators (#FP, #ASC, etc) are not understood by KEPServer_ePro
  - If you are trying to read local I/O in an AB SLC or PLC-5 you need to correctly set up the Slot Configuration tab of the device properties in KEPServer_ePro
  - PanelMate formats for non-default data types are not understood by the KEPServer_ePro driver. You should create tags in KEPServer_ePro for these addresses and define the data type in the tag, then use the tag instead of the address inside of the square brackets in PanelMate (Eg. [PLC1, tagname])

Troubleshooting communications and startup problems

- Symptom: The demo application or some other application is starting instead of the one you want, or no application starts and it boots into the ePro's desktop
- Possible Causes – The *PMStart.cmd* file isn't configured to run the correct PPS file or you copied the wrong PPS file to the ePro, or the *PMStart.cmd* file was deleted
  - Edit the *PMStart.cmd* file on the D:\ drive and verify that *MyCfg =* is set to the correct file name
  - Copy the PPS file back to your PC and import it into the PanelMate editor to see if you have the correct file on the ePro unit.
  - If the *PMStart.cmd* file does not exist you must reload it

Troubleshooting communications and startup problems

- Symptom: The ePro PS unit does not boot up to Windows
- Possible Causes:
  - The power supply is insufficient for the ePro PS (white or black screen)
    - The 8” requires 1.3 amps, the 10” 1.35 amps, the 12” 1.5 amps and the 15” 2.0 amps
    - Peak inrush is 7.0 amps for all except the 15” which is 8.0 amps
  - The Operating System has become corrupted
    - Losing power during a Protect Mode Save or performing a Protect Mode Save after installing bad software or being exposed to a virus or other malware could corrupt the OS. If this happens a “Restore to Factory Image” needs to be done.

Troubleshooting communications and startup problems

- Symptom: The ePro PS unit does not boot up to Windows (cont.)
- Possible Causes:
  - A device is installed in a PCMCIA, external CompactFlash driver or USB drive that is affecting proper startup. Remove all devices and try re-booting
  - The display or backlight has failed so that you can't see that it is running properly. Hook up an external monitor to ePro's VGA port to verify. If the display or backlight has failed, contact Eaton Electrical's service and repair department at (877) ETN-CARE (Backlights are field replaceable with the proper kit from service)
  - A hardware failure requires the unit be repaired. Contact Eaton Electrical's service and repair department at (877) ETN-CARE

Reloading a unit to original factory settings (for catastrophic recovery)

Reloading a unit to original factory settings

- Equipment Required:
  - USB Keyboard and Mouse
  - Factory Image Restore Kit
    - Cat# 76MLPS – Includes restore image on a CompactFlash module, a USB flash drive with Linux operating system and restore utility, and IL (Instruction Leaflet) with detailed step by step instructions for restoring the ePro PS internal operating system drive.

Reloading a unit to original factory settings

- Process Overview (excerpted from IL)
  1. Remove power from the ePro PS unit
  2. Install CompactFlash restore module to external CF socket (Make sure of correct orientation, don't force insertion!)
  3. Connect USB mouse and keyboard to USB ports
  4. Restore Power and when boot up.
  5. Once Linux loads from the USB drive (about 1 minute) you will be prompted to press "Y" on the keyboard to start the restore process.

Reloading a unit to original factory settings

- Process Overview (excerpted from IL)
  6. When the utility has finished restoring the internal drive you will be prompted to remove power and remove the Factory Image Compact Flash drive and USB flash drive
  7. Wait approximately 8-9 minutes to perform first-boot agent function, then when prompted click OK on the Netware Logon dialog.
  8. When the ePro XPe Configuration dialog comes up, use the drop list to select the proper ePro PS Classic model then click on “Apply Model”
  9. After all model changes have been made (approx. 1 minute) the “Save” button will go from a greyed out state to black. Click on the “Save” button. The system will then reboot.

Reloading a unit to original factory settings

- Process Overview (excerpted from IL)

10. Go to Start > Programs > ePro Manager – Touchscreen tab, and click on “Calibrate Touchscreen”
11. On the Penmount Control Panel click on the Calibrate tab then click on the standard calibration button to start the touchscreen calibration process.

Reloading a unit to original factory settings

- Process Overview (excerpted from IL)

12. Go to the system tray and double-click on the clock. Change the time zone settings to the correct time-zone and set the time and date.
13. Go to the system tray and double-click on the screen saver icon.  Adjust the number of seconds for the screen saver to kick in and set the brightness for the screen saver to prolong the backlight life.
14. Do a Protect Mode Save

Start > Programs > ePro Manager – select Protect Mode Save tab – click on " Commit "

Questions?

e-Mail: repair@advancedtech.com
Call: (800) 328-7287