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**PAC Configuration Tool “WebServer.exe.ini”**

DISCLAIMER:

The values in the ini file discussed herein do not normally require modification prior to PAC Web Server deployment. The values are used primarily for fine tuning and/or used in development or support situations. Please exercise caution when modifying these values, as although unlikely, it can potentially put the Web Server into an unusable state.

Note that all values in the INI file contain a corresponding default which are used by the PAC Web Server in the event an entire section or an individual key value pair is omitted from the INI file altogether or when the entered value is not valid. For instance the expected value should be a number and a character was entered, or the expected value should be a number between 1 and 10, and 11 was entered (obviously outside the range of acceptable values).Following is an example of the contents of a typical PAC “INI” file (a.k.a. “WebServer.exe.ini”):

[ABOUT]

VERSION=1.0.0.0 ;; DO NOT MODIFY!

[ADAPTERS]

ETHERNET-X2=PCI\E1I61CE72

ETHERNET-X3=PCI\E1I61CE73

[CODESYS]

CONFIGFILE=\Windows\Parker\CoDeSys\CODESYSControl.cfg

[LANGUAGE]

CUSTOM\_GLOBALIZATION\_FOLDER=\Hard Disk\Globalization

SUPPORTED=en,fr,de

DEFAULT=en

[LOGFILES]

;;LOGFILE\_FOLDER=\Hard Disk\Globalization

MAXFILES=3

[LOGIN]

INACTIVITY\_TIMEOUT=300

SESSIONTIMEOUT=600

[STARTUP]

TIMEOUTINTERVAL=15

TIMEOUTLOGGING=300

TIMEOUTMAXIMUM=0

WAITFOREVENTTIMEOUT=120

;;IPADDRESS1=192.168.1.50

;;IPADDRESS2=192.168.1.51

[SUPPORT]

DEBUGLEVEL=1

EXPANDFIRMWARE=false

[WEBSERVER]

CONFIGFILE=\Windows\Parker\Web\WebServer.exe.config

USESSL=false

DEFAULTPORT=81

[XPRESS]

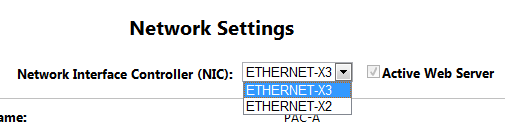
XPRESS\_PROJECT\_FOLDER=\Hard Disk\Project

PROJECTLOADTIMEOUT=30

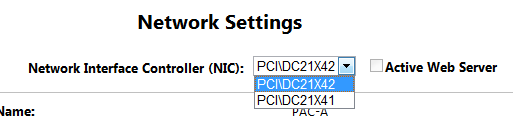
As illustrated above, the following are the current sections that make up the “INI” file: “ABOUT”, “ADAPTERS”, “CODESYS”, “LANGUAGE” ,“LOGFILES”, “LOGIN”, “STARTUP”, “SUPPORT”, “WEBSERVER” and “XPRESS” along with their respective “key=value” pairs.

Whenever the PAC web server starts up it immediately looks for the following file: “\Hard Disk\Webserver.exe.ini”. If the file cannot be found on the SD-card, the web server will automatically attempt to copy the template “INI” file located in the same folder the web server is running from (i.e., “Windows\Parker\Web\ Webserver.exe.ini”) to the location on the SD-card. If for some reason, it is unable to copy the template INI file to the SD-Card (e.g. the SD card is currently not inserted into the drive or the drive cannot be written to), it will simply use the template INI file from its default location.

# [ADAPTERS] section

Each key/value pair (i.e., key=value) in this section indicates the actual name of the physical adapter itself (e.g. “PCI\E1I61CE72”):

Followed by the value portion (e.g. “ETHERNET-X2”) which is the “mapped” name or value that will appear in the client web browser as shown above.

This actual **Adapter Name** key is extremely important and should not be altered. If the [ADAPTERS] section, or the key/value pairs within the [ADAPTERS] section are missing from the INI file altogether, or there is no adapter with the actual key name as specified, then a default adapter will be automatically chosen by the Windows operating system and its actual name (as opposed to the mapped name) of the adapter will be displayed in a combo box located on the ‘Network Settings’ page of the client web browser. 

NOTE: The adapters in the [ADAPTERS] section:

[ADAPTERS]

PCI\E1I61CE72=ETHERNET-X2

PCI\E1I61CE73=ETHERNET-X3

will appear in the client web browser in the same order they appear in this list.

# [CODESYS] section

If this section exists in the INI file, the CONFIGFILE value defines where the CODESYSControl.cfg file is located on the CE Device should it come time for the web server to update it. The section in the CODESYS config file is [SysTarget]. An example ‘key=value pair’ is NodeName=PAC123456789012.

Note that NodeName (the device name) in the config file gets automatically changed by the web server during the initial rollout and can also be changed later at any time by opening a client browser window, navigating to the ‘System Settings’ tab of the ‘PAC Configuration Tool’, then manually changing it.

# [LANGUAGE] section

The SUPPORTED key contains a comma-delimited list of two letter country codes indicating the languages to be supported by the GUI. Since the PAC is distributed with multiple language templates, this key-value pair is used to limit the overall choices available to the user. If you decide to make any of the additional languages distributed with the PAC, available to your users then you must add its two-letter country code to this list prior to starting the PAC.

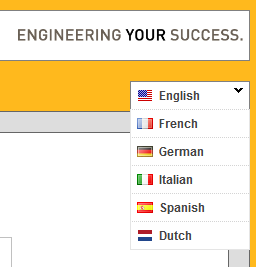
SUPPORTED=en,fr,de



Following is an example of appending three additional languages: ‘*it, es, nl’* (i.e., Italian, Spanish, and Dutch) to the current list of SUPPORTED languages already included with the PAC, but not indicated for selection in the default INI file.

SUPPORTED=en,fr,de,it,es,nl

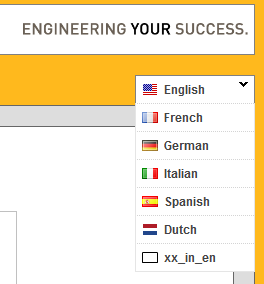
The next time the PAC is started and the user clicks on the ‘Language’ drop-down these three additional languages entered in the previous step will become available for selection as shown in this example:



Next the two-letter country code ‘xx’ (the default country code used in the custom template) is appended to the SUPPORTED keyword list in the INI file:

SUPPORTED=en,fr,de,it,es,nl,xx

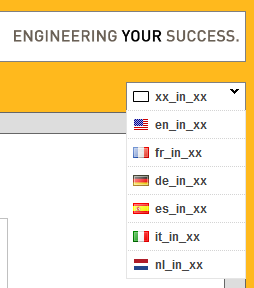
The next time the PAC is started and the user clicks on the ‘Language’ drop-down the additional custom language (“xx” in this example) is now available for selection:



Notice ‘xx\_in\_en’ now appears at the bottom of the drop-down menu.

When the new language is chosen from the drop-down menu, the drop-down shows the chosen language at the top of the drop-down and all the other language choices in their respective translated value.

The contents of the various PAC web pages are also instantly changed to reflect the new language choice.

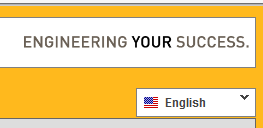


DEFAULT is a single ‘key-value pair’ indicating which language to be initially displayed to a user the first time they access the PAC via their web browser.

If this key-value pair is missing from the INI file, “en” will be set as the default.

DEFAULT=en

As soon as a user selects a different language from the drop-down, that language will then become the user’s default the next time they access the PAC via their web browser.



CUSTOM\_GLOBALIZATION\_FOLDER represents where the PAC should look for the “customized” globalization folder which contains the items used to supplement or override the current languages. The following value is the default value and only needs be entered into the INI file if for some reason the default should be overridden:

CUSTOM\_GLOBALIZATION\_FOLDER=\Hard Disk\Globalization

# [LOGFILES] section

Log files are extremely useful for debugging and/or for other support purposes. Log files are automatically created and periodically written to by the web server. The files are stored in the “\Windows\Parker\Logs\” directory by default. Log files are created on an as needed basis, that is, they are created only when the need to write something to the log is requested by the web server. If the respective file doesn’t already exist at the time of the request, it will be created with a name such as: “WebServer.20170811.txt” (the middle token representing the current date formatted as YYYYMMDD).

The MAXFILES key/value pair in the INI file is used to limit the number of log files that can exist at any given point in time. The default is “1”. If the value is “0”, then no log files will be created nor maintained. If the value is “1” then only one log file will exist at a time, i.e., the others are purged as soon as a new one is created. If the value is “2”, then the *latest* two log files will be kept.

Note that if you are keeping multiple log files in the ‘logs’ folder, there can possibly be gaps in the names of the files. For instance:

WebServer.20170211.txt

WebServer.20170209.txt

WebServer.20170121.txt

This can occur most likely because logging has not been taking place - for instance: the web server was not accessed on the days in between those particular dates.

SPECIAL NOTE:

Log files are by default, written to the PAC and not the SD card, thus whenever the PAC is restarted, all log files are lost since those log files are being written to memory and not persisted as they would be when written to the SD card. No matter the case, log files can be preserved by downloading them to your computer on a regular basis using the “Download a file” section on the “About the PAC” page of the client web-browser.

A change made to the MAXFILES key value does not take effect until the next time a new log file is created which would normally happen automatically on the very next write access on the next day. As an alternative, the current log file can be manually deleted thereby causing it to be recreated on the very next write.

Also, note that a change made to the IPADDRESS1 or IPADDRESS2 key value will not take effect until the web server is restarted.

# [STARTUP] section

IPADDRESS1 and/or IPADDRESS2

If either uncommented out key-value pair exists on the SD-card and at the time the web server starts up: the IP address of the 1st adapter specified in the INI file corresponding to the IPADDRESS1 key, or the IP address of the 2nd adapter specified in the INI file corresponding to the IPADDRESS2 key, results in corresponding IP address(es) on the server being automatically changed so long as the specified IP address value is valid and doesn’t already exist on the network, in which case, this directive is simply ignored.

The TIMEOUTINTERVAL represents the amount of time in seconds the server should wait between attempts to rebind the IP addresses to the adapters during initial startup. The *default* TIMEOUTINTERVAL is once every 5 seconds which is also the *minimum* amount.

The TIMEOUTMAXIMUM represents the maximum amount of time in seconds that the server will continue to attempt to bind the IP addresses to the adapters before the web server is automatically shut down. (This event can occur when the network is unavailable or an Ethernet cable is not plugged into the PAC). Specifying a value of 0 which is the *default* value and also the *minimum* amount for the maximum timeout, will cause the web server to continue attempting to rebind indefinitely (i.e., until it is successful).

The TIMEOUTLOGGING represents the amount of time in seconds between events being written to the log file by the web server while starting up and attempting to bind the IP address. This is to prevent the log file from growing out of control. This is especially true when the TIMEOUTMAXIMUM value has been set to an extremely large value, or to 0 causing the web server to continue checking indefinitely. The *default* TIMEOUTLOGGING is 300 seconds. The *minimum* is to write to the log once every 5 seconds.

The WAITFOREVENTTIMEOUT represents the amount of time in seconds the PAC Web Server waits during its startup for the LITESWITCH Daemon to provide a notification that it has completed its task. The *default* is 2 minutes (120 seconds) before the Web Server just continues to startup.

# [SUPPORT] section

This section is optional and is used primarily for support purposes.

DEBUGLEVEL is designated to provide additional information to be displayed on the client web browser and/or output to the server log file. The default value is 0 which displays all basic information; a value of 1 results in a ‘PAC Assemblies’ hyperlink appearing in the ‘About the PAC’ tab. The user can click on this hyperlink to expand (or collapse) to show a list of the current assemblies installed on the PAC along with all their version numbers and modification dates. A value of 2 does everything that 1 does, but also provides more verbose output to the log file. For instance, all ‘client server requests’ are output to the log file.

# [WEBSERVER] section

CONFIGFILE indicates the full file name and path of the custom configuration file which is processed by the PAC Web Server during startup to configure itself. The default is “\Windows\Parker\Web\Webserver.exe.config”

USESSL when set to true, indicates whether HTTPS[[1]](#footnote-1) should be used for server communication with client web browser applications; otherwise standard HTTP is used. The default is false.

DEFAULTPORT indicates the port to use for communication with client web browser applications. This is normally set to 81 when using HTTP[[2]](#footnote-2) (USESSL=false), or 443 when using HTTPS (USESSL=true).

The Webserver.exe.config file is in the ‘Windows’ folder on the PAC and changes to it do not get *persisted* (i.e., changes are lost whenever the PAC is restarted). However, during web server startup, the file does have several internal values in it synchronized with values in the ‘webserver.exe.ini’ which under normal conditions does get *persisted* on the SD card.

For debug and support purposes, the Port (e.g. 81 or 443) and the Communication Protocol (HTTP or HTTPS) are displayed on the Webserver control form and get output to the Log file.

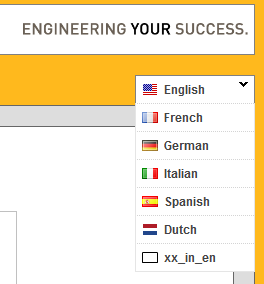
# [XPRESS] section

XPRESS\_PROJECT\_FOLDER indicates the path to the Xpress project being used to drive the PAC. The default folder is “\Hard Disk\Project”.

PROJECTLOADTIMEOUT indicates how long the PAC Configuration Tool waits for Xpress to finish loading a project before it merely continues executing subsequent tasks. The default max wait time is 30 seconds.

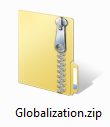
**How to implement customized language translation on the PAC.**

Following is an illustration of customizing (i.e., adding a new language to) the ‘Language’ drop-down:



Download a Globalization.zip file using the “Downloads” section of the ‘About the PAC’ page. Unzip the Globalization.zip file directly to the root folder of the SD Card.

Optionally unzip the Globalization.zip file to your own computer; perform the modifications on its contents as described below; then copy the resultant 'Globalization' folder to the root directory of the SD Card.



Once the contents of the unzipped Globalization template is modified and the two character country code is appended to the “Supplements” key of the “Language” section of the ‘PAC Ini file’, and the PAC is restarted, the new language will become available to users whenever they connect to the web server via the ‘PAC Configuration Tool’. 1

Perform the following steps to supplement or override the current set of languages:

Note that "*Swahili*" (having a two-character country code of "*sw*") will be used for this example.

**1**) Edit the **'Globalization\SupportedLanguages.xml**' file:

Each of the first set of *options* in the file represents the word "*Swahili*" translated into the respective language. The languages is what gets displayed when the user clicks on the “Languages” drop-down in the PAC Configuration Tool web page.

**a**) Modify each *'option'* value to whatever the word"*Swahili*" is in the corresponding language.

For example:

Replace "xx\_in\_en" with the value of "Swahili" in English (i.e. <Languages id="en"><option id="xx">Swahili</option>);

Replace "xx\_in\_fr" with the value of "swahili" in French (i.e. <Languages id="fr"><option id="xx">swahili</option>);

Replace "xx\_in\_de" with the value of "Swahili" in German (i.e. <Languages id="de"><option id="xx">Swahili</option>);

and so on...

**b**) Modify the value of each *'option'* in the group of options found under <Languages id="xx"> to whatever the corresponding language is in “*Swahili*”.

For example:

Replace "en\_in\_xx" with the value of "English" in Swahili (i.e. <option id="en">Kiingereza</option>);

Replace "fr\_in\_xx" with the value of "French" in Swahili (i.e. <option id="fr">Kifaransa</option>);

Replace "de\_in\_xx" with the value of "German" in Swahili (i.e. <option id="de">Ujerumani</option>);

and so on...

**c**) Replace all occurences of the two letter designation "*xx*" with “*sw*” in the entire file, (the language designation to be supplemented or overridden).

For example:

Replace all instances of "xx" with "sw".

**2**) Edit each template file in the **'Globalization\Languages\xx\**' folder: ( 'AboutInfo.xml' , ‘NetworkSettings.xml’, 'SystemSettings.xml',… etc.)

**a**) Translate the value pertaining to each 'lbl' (short name for 'label') attribute and optionally, the value of each 'ttp' ('tooltip') attribute2.

For example (in the 'AboutInfo.xml' file):

Replace the value "xxSeries" with "mfululizo" for the ModelNumberItem having the id="SERIES".

Replace the value "xxSoftware" with "programu" for the ModelNumberItem having the id="SOFTWARE".

Replace the value "xxVisualization" with "taswira" for the ModelNumberItem having the id="VISUALIZATION".

and so on...

**b**) Rename the parent folder containing the preceding set of files using the new two-letter country code.

For example:

Rename 'Globalization\Languages\xx\' to 'Globalization\Languages\sw\'.

**3**) Modify the internal contents of the 'Globalization\Languages\Flags\xx.png' file.

That is, use a graphical based editor to modify and save an image of the flag representing the new country.

**4**) Change the name of the 'Globalization\Flags\xx.png' file using the new two letter country code:

For example:

Rename 'xx.png' to 'sw.png' (i.e., 'Globalization\Flags\xx.png' to 'Globalization\Flags\sw.png').

**5**) Edit the **'Webserver.exe.ini**' file located in the root directory of the SD-card3 and append the two-letter country code.

For example:

[LANGUAGES]

SUPPORTED=en,fr,de,sw

1 For the ‘customized’ language(s) to be available for selection requires the SD-card to be inserted into the drive.

2 Leaving the value of the ttp ('tooltip') attribute blank results in the value of the lbl ('label') attribute being used for the tooltip.

3 A default 'PAC Configuration Tool Ini file' is automatically created in the root directory of the SD-Card the first time the PAC is started.

If the PAC has not been previously started with the SD-Card inserted, you will need to download the 'PAC Configuration Tool Ini file' to your PC; modify its contents as described above; and then 'manually' copy the file to the root directory of the SD-card.

## Process Flow



Formatting a Date into a string:

The format can be combinations of the following:

* d day of month (no leading zero)
* dd day of month (two digit)
* o day of the year (no leading zeros)
* oo day of the year (three digit)
* D day name short
* DD day name long
* m month of year (no leading zero)
* mm month of year (two digit)
* M month name short
* MM month name long
* y year (two digit)
* yy year (four digit)
* @ Unix timestamp (ms since 01/01/1970)
* ! Windows ticks (100ns since 01/01/0001)
* '...' literal text
* '' single quote
* anything else literal text

Formatting a Time into a string:

The default format is "HH:mm". To use 12 hour time use something similar to: "hh:mm tt". When both "t" and lower case "h" are present in the timeFormat, 12 hour time will be used.

H Hour with no leading 0 (24 hour)

HH Hour with leading 0 (24 hour)

h Hour with no leading 0 (12 hour)

hh Hour with leading 0 (12 hour)

m Minute with no leading 0

mm Minute with leading 0

s Second with no leading 0

ss Second with leading 0

l Milliseconds always with leading 0

c Microseconds always with leading 0

t a or p for AM/PM

T A or P for AM/PM

tt am or pm for AM/PM

TT AM or PM for AM/PM

z Timezone as defined by timezoneList

Z Timezone in Iso 8601 format (+04:45)

'...' Literal text (Uses single quotes)

1. HTTPS (SSL) is not available in the current release. [↑](#footnote-ref-1)
2. Port 80 is reserved for use by the Xpress Server when that option is enabled. [↑](#footnote-ref-2)