Read Me: Ini and Host File Editor

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Purpose and Functionality

IniFileEditor is a program written in JAVA for maintaining .ini files per the Windows spec located here. It can also add or update the entries in a hosts file. The opportunity to make a generic bulk editing tool was taken when then the need to migrate a customer to a new IP addresses for AWS cloud surfaced. The tool's input is driven by a configuration file.

INI File Maintenance

The program updates values in an INI file section if present in the file or adds the new property and value if not already present while preserving all other lines in the files including comments such as leading semicolons. Before any changes are made it creates a backup of the original file.

Host File Maintenance

With administrator rights it is possible to edit host file entries by inserting new entries, updating the IP addresses of existing entries or removing existing entries.

Note: The host file capabilities have been written for execution on a windows machine with regard to the host file meaning the program looks for the *Windows/system32/drivers/etc* directory after locating the operating system drive. Although written in JAVA It has not yet been coded with other operating systems in mind.

Configuration Format

Configuration is a prototypical JAVA xml properties file with 2 required key patterns and 4 optional keys specifying behavior.

Required Key Patterns

The required key patterns are:

- ini + groupName + FileNamePattern
- 2. ini + groupName + SectionName

...where the plus symbol signifies concatenation, i.e. 'ini1FileNamePattern' or 'ini1SectionName.'

Optional Key Patterns

The optional key patterns are:

- 1. unattendedMode
- 2. ini + groupName + RestrictSearchToDirectories
- 3. host + groupName + add
- 4. host + groupName + remove

...where the plus symbol signifies concatenation, i.e. 'ini2RestrictSearchToDirectories' or 'ini3SectionName.' The entries for hostadd and hostremove require a pipe-delimited entry for the value and use key names like host1add, host2add, host3add, host1remove, etc.

Table of Required and Optional Keys Explained

Key Pattern	Purpose	Value Format	Required
unattendedMode	Required to run script without user input such as when launched by another process	Boolean (true or false)	Required to run script without user input. Assumes value of false if not provided.
FileNamePattern e.g. ini1FileNamePattern or ini3FileNamePattern	The INI file to search for and make edits in. To find the setup.ini file in the first group of changes it should be set to <entry key="ini1FileNamePattern">setup.ini</entry>	String in the format of an INI file such as 'chantest.ini'	Yes
SectionName e.g. ini1SectionName or Ini2SectionName	The section name without square brackets to search for. Examples: identity, connect1, connect2, general, CreditGateway	Section name in the INI file without square brackets such as connect1	Yes
RestrictSearchToDirectories e.g. ini1RestrictSearchToDirectories	Restricts the search for the file pattern and section to a specific set of directories or single directories.	Semicolon delimited list of directories without trailing backslash. 2 Examples: 1. C:\Tomax;C:\MyFiles 2. D:\MyPlace\stuff;D:\YourPlace\foo\bar	Required to avoid editing all matching files found on the machine
hostadd e.g. host1add, host2add, host3add	Adds an entry to the operating system drive's hosts file in the /Windows/system32/drivers/etc/directory or if the host name is already present updates the IP address.	Pipe-delimited with IP address first	Required only if you want to modify the hosts file
hostremove e.g. host1remove, host3remove	Removes an entry from the operating system drive's hosts file in the /Windows/system32/drivers/etc/directory if and only if both the IP address and host match.	Pipe-delimited with IP address first	Required only if you want to remove an entry from the hosts file

Beyond that, all other keys in a group of INI changes are treated as entries in the editing/adding operations with key being a property in the .ini file and value being the value in the .ini file respectively.

For example:

```
<entry key="ini1site">8601</entry>
<entry key="ini1timeout">12121212</entry>
<entry key="ini1somenewkey">somenewvalue4</entry>
<entry key="ini1somenewkey666">somenewvalue666</entry>
```

The ini prefix and groupName (in this case "1") are not actually used in the file. The above example would update or add entries for site, timeout, somenewkey and somenewkey666.

Basic Configuration File Example

Here is a basic example file which will make only INI changes by looking in the file system for all files matching the pattern "setup.ini' and a section called "connect1" (literally "[connect1]" in the file). Note in this 'minimal configuration' example that:

- 1. unattendedMode is not supplied thus the user is prompted to continue
- 2. There are no hostadd or hostremove keys present (changing only INI files)
- 3. RestrictSearchToDirectories is not supplied for the group (machine will be scanned)

So, what changes would be made ibn this minimal example? If qualifying files are found, the site will be created or updated to 8602, along with timeout being set to 9999. In the example, "somenewkey" is a new key so the property-value pair "somenewkey=somenewvalue" will be added to the file in the connect1 section of setup.ini files which were found **and** contain a [connect1] section.

Full Configuration File Example

Below is a full configuration file example using unattendedMode and RestrictSearchToDirectories along with hostadd and hostremove tagging whose execution which will be referenced further below.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
cproperties>
   <!-- unattendedMode should be set to true anytime the user will not be able to tell
   the program to continue such as when it is launched from another process -->
   <entry key="unattendedMode">true</entry>
   <!-- Host additions and removals -->
   <entry key="hostladd">8.8.8|myhostl.com</entry>
   <entry key="host2add">9.9.9.9|myhost2.com</entry>
  <entry key="host2remove">9.10.9.10|myhost3.com</entry>
   <!-- First INI File change set -->
   <entry key="ini1FileNamePattern">setup.ini</entry>
   <entry key="ini1SectionName">connect1</entry>
   <entry key="inilRestrictSearchToDirectories">
   C:\Development\TomsTools\IniFileEditor\IniFileEditor\ExampleFiles;C:\Development\Toms
   Tools\McKessonAwsMigration\mcKessonAwsMigration\src\ExampleFiles</entry>
   <entry key="ini1site">8601</entry>
   <entry key="ini1timeout">12121212
   <entry key="inilsomenewkey">somenewvalue4</entry>
   <entry key="inilsomenewkey666">somenewvalue666</entry>
   <!-- Second INI File change set -->
   <entry key="ini2FileNamePattern">tomax.ini</entry>
   <entry key="ini2SectionName">JavaPOS</entry>
   <entry key="ini2RestrictSearchToDirectories">
   C:\Development\TomsTools\IniFileEditor\IniFileEditor\ExampleFiles;C:\Development\Toms
   Tools\McKessonAwsMigration\McKessonAwsMigration\src\ExampleFiles</entry>
   <entry key="ini2Printer1">receipt changed.txt</entry>
   <entry key="ini2Printer3">receipt33.txt</entry>
   <entry key="ini2Printer4">receipt4_edited2.txt</entry>
   <entry key="ini2somenewkey">somenewvalue4</entry>
   <entry key="ini2LogoFile1">somenewvalue5</entry>
```

Summary of INI Changes in Full Example File

Regarding the INI changes, if qualifying files are found they will be executed against each group. Remember that group name talked about earlier? It can be as simple as 1 or 2 or longer if needed.

The tags commented under "First INI File change set" will result in the following applied to any **setup.ini** file found within the search restriction which contains a **[connect1]** section:

- site will be created or updated to 8601
- timeout will be created or set to 12121212
- **somenewkey** is a new key so the property-value pair "somenewkey=somenewvalue4" will be added
- somenewkey666 is a new key so the property-value pair "somenewkey666=somenewvalue666" will be added

The tags commented under "Second INI File change set" will result in the following applied to any **tomax.ini** file found within the search restriction which contains a [JavaPOS] section:

- Printer1 will be created or updated to receipt changed.txt
- **Printer3** will be created or updated to receipt33.txt
- **Printer4** will be created or updated to receipt4_edited2.txt
- **somenewkey** is a new key so the property-value pair "somenewkey=somenewvalue4" will be added

• **LogoFile1** is a new key (since technically there is a commented one present) so the property-value pair "LogoFile1=somenewvalue5" will be added

Summary of Hosts File Changes in Full Example File

Regarding host file changes, if the program is run with administrator rights:

- A host entry will be added for **myhost1.com** with IP address 8.8.8.8
- A host entry will be added for **myhost2.com** with IP address 9.9.9.9
- Any host entry which matches exactly the hostname myhost3.com and 9.10.9.10 will be removed from the host file

INI and Host File Example Results from Full Example File

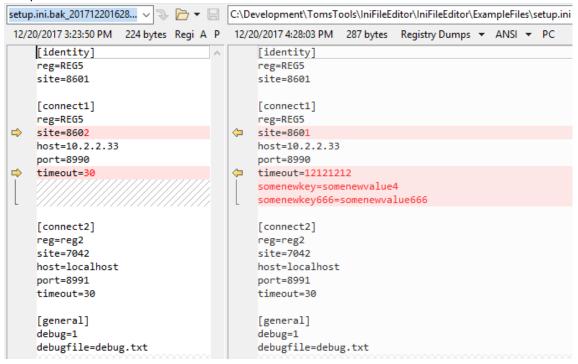
So does this thing actually work? An example showing pre/post execution which spells out the changes in comparison reports follows.

Setup.ini File Pre Execution

```
1
    □ [identity]
      reg=REG5
 3
      site=8601
 4
 5
    □ [connect1]
 6
      req=REG5
 7
      site=8602
      host=10.2.2.33
 8
 9
      port=8990
10
      timeout=30
11
12
    □ [connect2]
13
      reg=reg2
14
      site=7042
15
      host=localhost
16
      port=8991
17
      timeout=30
18
19
    □ [general]
20
      debug=1
21
      debugfile=debug.txt
22
```

Post Execution Comparison Report (Setup.ini)

Below is a comparison of the before (left) and after (right) post run which is also using the backup of the setup.ini file:



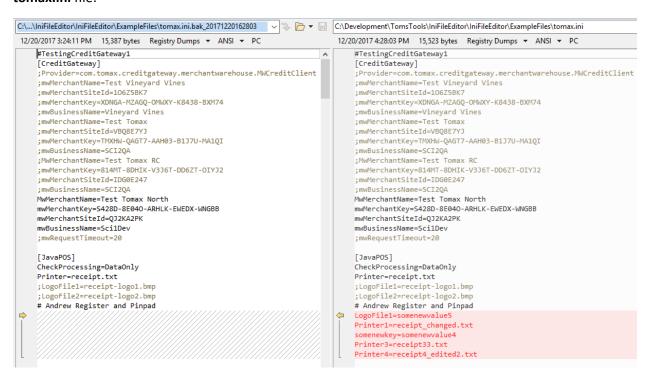
Tomax.ini File

Pre Execution

```
#TestingCreditGateway1
   □ [CreditGateway]
     ;Provider=com.tomax.creditgateway.merchantwarehouse.MWCreditClient
     ;mwMerchantName=Test Vineyard Vines
     ;mwMerchantSiteId=106Z5BK7
 6
    ;mwMerchantKey=XDNGA-MZAGQ-OMWXY-K8438-BXM74
    ;mwBusinessName=Vineyard Vines
 8
     ;mwMerchantName=Test Tomax
q
     ;mwMerchantSiteId=VBQ8E7YJ
    ;mwMerchantKey=TMXHW-QAGT7-AAH03-B1J7U-MA1QI
    ;mwBusinessName=SCI2QA
     ;MwMerchantName=Test Tomax RC
13
     ;mwMerchantKey=814MT-8DHIK-V3J6T-DD6ZT-OIYJ2
14
    ;mwMerchantSiteId=IDG0E247
15
     ;mwBusinessName=SCI2QA
16
     MwMerchantName=Test Tomax North
17
     mwMerchantKey=S428D-8E040-ARHLK-EWEDX-WNGBB
18
    mwMerchantSiteId=QJ2KA2PK
     mwBusinessName=Sci1Dev
19
     ;mwRequestTimeout=20
21
   □ [JavaPOS]
23
     CheckProcessing=DataOnly
24
25
     Printer=receipt.txt
     ;LogoFile1=receipt-logo1.bmp
26
     ;LogoFile2=receipt-logo2.bmp
27
    # Andrew Register and Pinpad
28
29 [JavaPOS:1006:REG11]
30
    ;Printer=INTEGRATED:com.tomax.posdev.jpos.TmxPrinter(POSPrinter)
31
```

Post Execution Comparison Report (Tomax.ini)

Below is a comparison of the before (left) and after (right) post run which is also using the backup of the **tomax.ini** file:



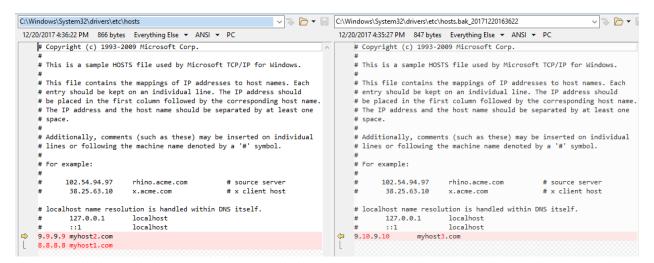
Hosts File

Pre Execution

```
# Copyright (c) 1993-2009 Microsoft Corp.
 3
   # This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
 4
   # This file contains the mappings of IP addresses to host names. Each
   # entry should be kept on an individual line. The IP address should
   # be placed in the first column followed by the corresponding host name.
 7
8
   # The IP address and the host name should be separated by at least one
9
   # space.
10
   # Additionally, comments (such as these) may be inserted on individual
11
   # lines or following the machine name denoted by a '#' symbol.
13
14
   # For example:
15
16 #
          102.54.94.97
                           rhino.acme.com
                                                    # source server
17
           38.25.63.10
                           x.acme.com
                                                    # x client host
18
   # localhost name resolution is handled within DNS itself.
20 #
      127.0.0.1
                       localhost
        ::1
                        localhost
   9.10.9.10 myhost3.com
23
```

Post Execution Comparison Report (Hosts)

Below is a comparison of the before (left) and after (right) post run which is also using the backup of the hosts file:



Ping Verification Post Execution

You can verify that your host entry is working by executing the following in the cmd shell:

```
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\tzarr>ping myhost1.com

Pinging myhost1.com [8.8.8.8] with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=49ms TTL=57
Reply from 8.8.8.8: bytes=32 time=47ms TTL=57
Reply from 8.8.8.8: bytes=32 time=48ms TTL=57
Reply from 8.8.8.8: bytes=32 time=48ms TTL=57

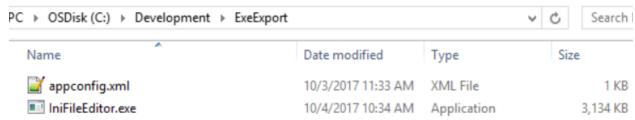
Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 47ms, Maximum = 49ms, Average = 48ms

C:\Users\tzarr>
```

Note: For a valid ping response you must have a route to the host (VPN connection, etc.)

Installation Run Book

1. Drop the 2 files provided into the same directory. **Note**: appconfig.xml is mandatory.



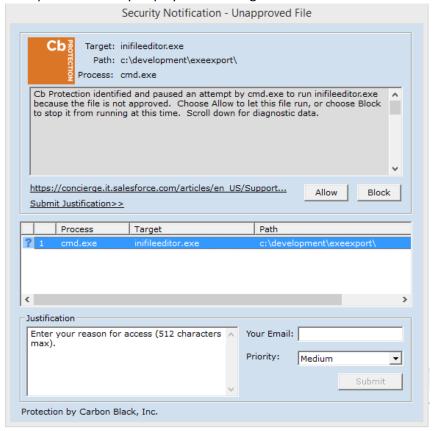
2. Check that the xml file has the correct edits to the ini file you want to make. Here is an example showing a change for a property called "host" in the **connect1** section of the **setup.ini** file:

```
<?xml version="1.0" encoding="UTF-8"
?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<comment>fileNamePattern and sectionName are required and are used to
locate the keys in the.ini file that will be changed. Outside of those are
the entries that will be updated or created.</comment>
<entry key="requiredFileNamePattern">setup.ini</entry>
<entry key="requiredSectionName">connect1</entry>
<entry key="host">10.8.4.4</entry>
</properties>
```

3. Run the program from a cmd shell using the directory with the IniFileEditor.exe and appconfig.xml files in it like this. **Note**: It may take a moment for the program to start or for security software to warn about the file.



4. If security software or operating system prompts are presented, allow the file to run. Here is an example of what may display as a warning:



- 5. Allow the program execute. This may take a few minutes depending on the machine capacity. Phases of the execution are outlined in the section "Phases."
- 6. There should now be a logs directory. Inspect the log files for the program results.

Phases

Phase I - Confirm Changes to be made (does not apply in unattended mode)

By providing some configuration values in an XML file and running the script, the user will be told about the changes and then asked if they want to continue:

```
Ini File Editor

This program will back up your files and create a new file with different key en tries by section as follows:

Change #1:

File:setup.ini

Section: [connect1]

site=8602

somenewkey=somenewvalue

timeout=999999

2017-10-04 09:19:29.101 [main] INFO com.salesforce.commercecloud.config - should dContinue took 16 ms.

2017-10-04 09:19:29.101 [main] INFO com.salesforce.commercecloud.config - should dContinue invoked...

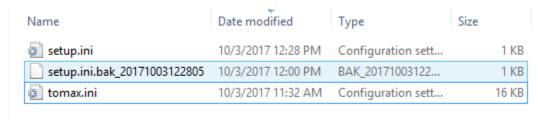
Type 'C' to continue or 'Q' to quit.
```

Phase II – Scan file system

In this phase all drives of the system are scanned looking for a matching file pattern and section; in our example case: "setup.ini" and "connect1." Files which match these conditions are pulled in for editing. **NOTE**: It could take a few minutes for this process to complete.

Phase III – Backup files

The original files are backed up with a timestamp in mask format "YYYYMMddHHmmss" or more plainly: 4-digit year 2-digit month 2-digit day 2-digit hour 2-digit minute 2-digit second. Here is a folder with a backup of the setup.ini file:



Phase IV – Edit files

In this phase the edits and commits are made to the .ini files based on the configuration entries.

Phase V – Verify Changes

In this phase the files are re-read from disk to make sure the changes are present.

Forensics

Logging is done with the JAVA library log4j2. A directory called logs relative to the executable will be created along with the empty files if not provided already. Logging of nearly everything is done to the console window as the program executes. There are also 2 log files provided:

IniFileEditor-all.log	Contains the key milestones that the program runs through
IniFileEditor-error.log Contains any errors handled during execution	

Here is an example of the IniFileEditor-all.log file:

```
2017-10-03 11:59:27.773 [main] INFO com.salesforce.commercecloud.config -
                                                                                                                        Starting program..
2017-10-03 11:59:27.778 [main] INFO com.salesforce.commercecloud.config - Creating Ini file change 2017-10-03 11:59:27.781 [main] INFO com.salesforce.commercecloud.config - Searching absolute path: 'C:\Development\TomsTools\IniFileEditor\IniFileEditor\.' for: 'appconfig.xml'.
                                                                                                                        Creating Ini file change list ...
                                                          com.salesforce.commercecloud.config - Creating Ini file change list took 28 ms. com.salesforce.commercecloud.config - displayWhatWillChange invoked... com.salesforce.commercecloud.config - shouldContinue took 1 ms.
2017-10-03 11:59:27.807 [main] INFO
2017-10-03 11:59:27.807 [main] INFO
2017-10-03 11:59:27.809 [main] INFO
2017-10-03 11:59:27.810 [main] INFO
                                                           com.salesforce.commercecloud.config
                                                                                                                        shouldContinue invoked
2017-10-03 12:00:06.333 [main] INFO
                                                          com.salesforce.commercecloud.config - shouldContinue took 38523 ms. Long duration here could be from user
delaying their input.
2017-10-03 12:00:06.334 [main] INFO
2017-10-03 12:00:06.339 [main] INFO
                                                           com.salesforce.commercecloud.config -
                                                                                                                        getFilesMatchingFileNamePattern...
                                                           com.salesforce.commercecloud.config -
                                                                                                                        findConfigFiles invoked ..
2017-10-03 12:00:06.340 [main] INFO
2017-10-03 12:00:06.341 [main] INFO
2017-10-03 12:00:59.738 [main] INFO
                                                           com.salesforce.commercecloud.config -
com.salesforce.commercecloud.config -
                                                                                                                       Checking drives..
Checking: 'C:\'
                                                           com.salesforce.commercecloud.config
                                                                                                                        findConfigFiles has 4 elements.
2017-10-03 12:00:59.739 [main]
2017-10-03 12:00:59.739 [main]
2017-10-03 12:00:59.739 [main]
                                                 INFO
INFO
                                                           com.salesforce.commercecloud.config com.salesforce.commercecloud.config
                                                                                                                        findConfigFiles took 53398 ms.
getFilesMatchingFileNamePattern took 53405 ms.
                                                 INFO
                                                           com.salesforce.commercecloud.config
                                                                                                                        getFilesContainingSection.
2017-10-03 12:00:59.745 [main] INFO
2017-10-03 12:00:59.745 [main] INFO
2017-10-03 12:00:59.747 [main] INFO
                                                           com.salesforce.commercecloud.config -
                                                                                                                        getFilesContainingSection took 5 ms.
                                                           com.salesforce.commercecloud.config
com.salesforce.commercecloud.config
                                                                                                                        backupOriginalFiles...
backupFile invoked...
2017-10-03 12:00:59.747 [main] INFO
                                                           com.salesforce.commercecloud.config
                                                                                                                        appendBakToFile invoked ..
                                                                                                                        appendBakToFile took 0 ms.
backupFile took 22 ms.
2017-10-03 12:00:59.747
                                       [main]
                                                 TNFO
                                                            com.salesforce.commercecloud.config
```

Absence of data in the IniFileEditor-error.log (0 kb file size) indicates that the configuration was done appropriately and the run was successful. Contact the developer with any other errors. **Note**: If you

encounter SAX parser errors, check the formatting of your appconfig.xml file. Below is a fully documented example file.

Documented Full Configuration File Example

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
Fproperties>
<!-- unattendedMode should be set to true anytime the user will not be able to tell the program to continue such as when it is launched from another process -->
<entry key="unattendedMode">true</entry>
<!-- Changing hosts...
Host entry keys must start with host and end with either add or remove. The keys must have a unique name. The value should be: IP address + pipe + hostname.
Note: Manipulating the host file successfully requires the program to be run as administrator.
<entry key="hostladd">8.8.8|myhostl.com</entry>
 <entry key="host2add">9.9.9.9|myhost2.com</entry>
 <entry key="host2add">9.10.9.10|mvhost3.com</entry>
<!-- Changing INI file entries...
INI file entries require the prefix 'ini' + groupName + suffix. Suffixes 'FileNamePattern' and 'SectionName' are required. Suffix 'RestrictSearchToDirectories'
is optional but useful to avoid potentially scanning the whole machine. All other suffixes will be applied to the INI file without the 'ini' and group name used.
So for group 1 to change or add the timeout to the connect1 section you can use a key of iniltimeout and it will be applied to the INI file matching the file
pattern and section as timeout=<newvalue>
-->

--> Fourth INI File change set (actually operates on the same file as the first ina different section) -->
<entry key="ini4FileNamePattern">setup.ini</entry>
 < <entry key="ini4SectionName">connect2</entrv>
 <entry key="ini4RestrictSearchToDirectories">
C :\Development\TomsTools\IniFileEditor\IniFileEditor\ExampleFiles;C:\Development\TomsTools\McKessonAwsMigration\McKessonAwsMigration\src\ExampleFiles</entry>
 <entry key="ini4timeout">777</entry>
 /</properties>
 <entry key="inilsomenewkey666">somenewvalue666</entry>
 <!-- Second INI File change set -->
 <entry key="ini2FileNamePattern">tomax.ini</entry>
 <entry key="ini2SectionName">JavaPOS</entry>
 <entry key="ini2RestrictSearchToDirectories">
C:\Development\TomsTools\IniFileEditor\IniFileEditor\ExampleFiles:C:\Development\TomsTools\McKessonAwsMigration\McKessonAwsMigration\src\ExampleFiles</entry>
<entry key="ini2Printer1">receipt changed.txt</entry>
 <entry key="ini2Printer3">receipt33.txt</entry>
 <entry key="ini2Printer4">receipt4 edited2.txt</entry>
 <entry key="ini2somenewkey">somenewvalue4</entry>
<entry key="ini2LogoFile1">somenewvalue5</entry>
<!-- Third INI File change set -->
<entry key="ini3FileNamePattern">tomtest.ini</entry>
<entry key="ini3SectionName">Animals</entry>
<entry key="ini3RestrictSearchToDirectories">
C:\Development\TomsTools\IniFileEditor\IniFileEditor\ExampleFiles;C:\Development\TomsTools\McKessonAwsMigration\McKessonAwsMigration\src\ExampleFiles</entry>
<entry kev="ini3whale">mammal</entry>
<entry kev="ini3shark">fish</entry>
<!-- Fourth INI File change set (actually operates on the same file as the first ina different section) -->
<entry key="ini4FileNamePattern">setup.ini</entry>
<entry kev="ini4SectionName">connect2</entry>
<entry kev="ini4RestrictSearchToDirectories">
C:\Development\TomsTools\IniFileEditor\IniFileEditor\ExampleFiles;C:\Development\TomsTools\McKessonAwsMigration\mcKessonAwsMigration\src\ExampleFiles</entry>
<entry key="ini4timeout">777</entry>
</properties>
```

Developer Contact and Support Info

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