



Sentinel Hardware Keys (SHK) Troubleshooting Guide

Revision	Date	Author	Reason for Change
1	8/7/08	Pujan Jetly	First Release

Table of Contents

1. [*Implementation/Integration Issues*](#)
2. [*Monitoring Tool issues*](#)
3. [*API issues*](#)
4. [*Shell issues*](#)
5. [*Generic Issues*](#)
6. [*Java issues*](#)
7. [*Field Activation issues*](#)

Implementation/Integration Issues

Issue1: In License Designer stage when I try to build a strategy into my Sentinel Key it gives error message: “Failed to locate Developer Key”

Resolution

- > Open toolkit
- > Check “Key Status” pane
- > 2 keys should be listed here; Developer and Sentinel/User
- > Check if at the time of programming a Sentinel/User key, Developer Key is plugged in as well.

Issue2: Both Sentinel Key and Developer Key are attached, but unable to proceed building the design in License Designer. Getting message “Please select a ‘Sentinel Key’ in Key Status”

Resolution

- > Open toolkit
- > Check “Key Status” pane
- > 2 keys should be listed here; Developer and Sentinel/User
- > Check if at the time of building a License Template; out of Sentinel and Developer Key, in Key Status pane, Sentinel Key is selected.

Issue3: Shelled application is not working in Terminal server environment. Getting error “E0203 – Sentinel Key not found”

Resolution: By default applications programmed in standalone mode will not work in Terminal Server environment. To make standalone protected application work in Terminal session:

- > Open Toolkit
- > Load the license template
- > Select the shell feature and click Edit
- > Go to “Networking” tab of “Shell Settings”
- > Go to option “Terminal Client (Standalone Only)”

- > Make it ON

NOTE: For API-protected applications, you need to call SFNTGetLicense function with SP_ENABLE_TERMINAL_CLIENT flag.

Issue4: Error #426 (SP_ERR_STRONG_NAME) at the time of shelling .NET application

Details: .NET executables signed with strong names cannot be shelled. However .NET dll's signed with strong names can be shelled.

Issue5: Error #418 (SP_ERR_IMPORT_OVERWRITE_ERROR) when applying Shell to applications

Details: Hide import symbol option is not supported with specified application.

- > Open Toolkit
- > Load license template in License Designer stage
- > Select Shell feature and click Edit
- > Go to "Security" tab
- > Uncheck "Hide Import Symbols" option

Issue6: SFNTGetLicense API call failing with error SP_ERR_UNIT_NOT_FOUND in API Explorer

Resolution:

Make sure that corresponding License Template is recently build into the Sentinel Key

- > Open Toolkit
- > Go to License Designer stage
- > Load the created license template
- > Build that license template in Sentinel key
- > Go to API Explorer stage
- > Select the mode in which application is protected in SFNTSetContactServer API
- > Execute SFNTSetContactServer
- > Click on SFNTGetLicense
- > Select the license template recently build in License ID field
- > Execute SFNTGetLicense

[Table of Contents](#)

Monitoring Tool Issues

Issue1: Sentinel License Monitor is not working

Resolution

Please check the points listed below:

- > Host system is accessible using ping command.
- > JRE version 1.6 or higher is installed on client system.
- > Sentinel Keys Server is running on host system.
- > Port 7002 (the default port used by the Sentinel Keys Server to respond to the client's HTTP requests) is not busy on the client system. You can also modify the port using the configuration file.

Issue2: "Error in downloading the client information file" error appears

Resolution

Try the steps listed below:

- > Launch Internet Explorer.
- > From the Tools menu, select Internet Options.
- > Click the General tab.
- > Under Temporary Internet Files, click Settings.
- > Select "Every visit to the page".
- > Click OK.
- > Click the Security tab.
- > Select the Internet zone, if not already selected.
- > Click Custom Level.
- > Reset the custom settings to Medium.
- > Click OK to apply the settings specified.

Table of Contents

API specific Issues

Issue1: Error #203 (SP_ERR_INVALID_LICENSE) thrown by SFNTGetLicense API in SP_STANDALONE mode on Mac 10.5

Resolution

SHK1.0.2.1-PatchForLeopard is available under THOR DOC Id 6769

Issue2: What do I need Key Programming APIs for?

Resolution

Key Programming API (Setup) library can be used for two purposes:

-> Programming the license information generated by Toolkit.

-> Updating the instance values of features, based on conditions.

Table of Contents

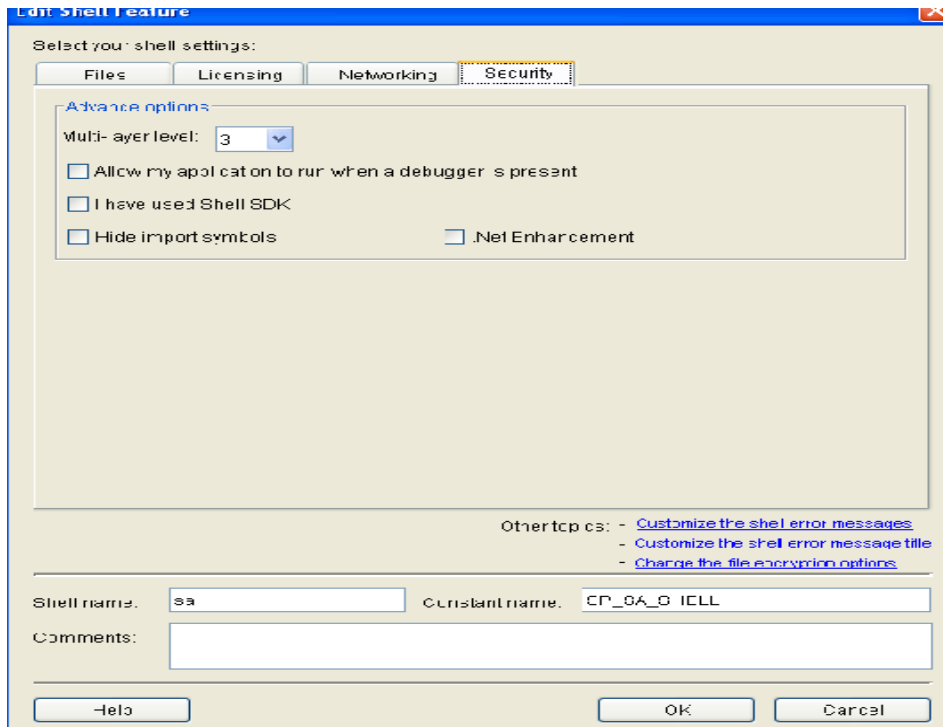

```
*
* (5) if (loaded from %SystemRoot%\WinSxS)
*     return TRUE; [loaded from the WinSxS cache]
*
* (6) if (manifest is in the same folder as the dll)
*     return TRUE;
*
* (7) return FALSE; [loaded with another manifest]
*
```

Associated Thor id 5802

Issue2: Application targeted for .Net 2.0 but compiled with .Net 3.5 will not work with the shell

Resolution

- > Open Toolkit
- > Go to License Designer stage
- > Load your license template
- > Under Shell tab, select your shell feature and click on Edit
- > Click on Security Tab
- > Check "Allow my application to run when a debugger is present" under the security tab.
- > Make shell again and rebuild your strategy



Issue3: When I protect a DLL that is statically linked to the application, the application fails to execute with protected DLL. If the DLL is linked dynamically, it executes successfully.

Cause

After shelling the dll that is linked statically with application executable, the application's executable won't run or crash. Please refer to the link <http://msdn2.microsoft.com/en-us/library/ms885202.aspx> for more details.

“For each DLL that is not called with the DLL_PROCESS_ATTACH value, the system calls the entry-point function of the DLL. This call is made in the context of the thread that caused the process address space to change, such as the primary thread of the process or the thread that called LoadLibrary.....”

Now in case of shelled DLL, the protection logic works inside the DLLMain and it implements the complete security logic which causes an issue when DLL is linked statically.

Resolution

1. Protect both the static linked DLL, and executable instead of protecting only the DLL.
2. Use Load Library instead of linking the DLL statically.

Issue4: Unable to run the shelled application using the update wizard; getting Error#504 (SP_ERR_NO_CONFIG_FILE)

Resolution

- > Open Toolkit
- > Go to License Designer stage and load the license template
- > Shell the application using a strategy
- > Click Make Shell option; it prompts for the destination path.
- > Specify a folder.

Now when you use the associate wizard update and save the look and feel you chose it again saves this and prompts you for the destination folder. This folder and the previously asked destination folder have to be the same. Otherwise you get the error.

But if you still run the wizard .exe you still would get the same error 504 because this wizard.exe looks for a configuration file which is inside the .cab file and is not able to look into the .cab file. The .exe file does this. So you have to run the application. The application would use the associate wizard update to run. Now you would have a .cab file wizard.exe and a window folder in that destination folder.

- > Cut the content of the window folder i.e. the .dll file and the shelled application.exe and paste them where the .cab file exists.
- > Click the protected application it would run successfully.

Issue5: Shell and application signing

Problems

- > SignTool.exe not able to sign a shelled .NET application protected using earlier versions of the Sentinel Hardware Key Shell.
- > Shelling a signed .Net application removes the digital signature.

Resolution

1.0.3.2 Version of the Sentinel Hardware Key Shell Engine resolves these issues. The patch is available under THOR DOC Id 6352

Issue6: Error E0027 - Code Checksum failed

Resolution

Shelled Prolog application returns the above error. SHK 1.0.3.7 resolves this issue and fixed shell engine is available under THOR DOC Id 6760

Issue7: .NET applications protected using Quick Shell and Shell methods fail to run if it uses XML serialization

Resolution

If .NET executable is targeting .NET 2.0, the problem can be resolved if before shelling the .NET executable; developers can use XML Serializer Generator Tool (Sgen.exe) to create an XML serialization assembly for types in the .NET exe.

Follow the following series of steps:

- > Assuming that the unshelled exe is TestKey.exe, run sgenTestKey.exe in command prompt. This creates TestKey.XmlSerializers.dll in the same folder.
- > Now Shell the exe and copy paste the .XMLSerializers.dll generated in step 1 to the same folder where the shelled exe is located.
- > Running the Shelled exe now should execute it fine.

The sgen.exe utility can be found in Program Files\Microsoft Visual Studio 8\SDK\v2.0\Bin folder of Visual Studio Installation.

[Table of Contents](#)

Generic Issues

Issue1: Does Sentinel Hardware Keys allow server side configuration?

Resolution

Sentinel Keys SDK provides you the following configuration files:

Client-side Configuration File (sntlconfig): Using this file, the protected application users can set these parameters: the network protocol, Sentinel Keys Server host, heartbeat interval for maintaining license, and Sentinel Keys Server socket port.

Server-side Configuration File (sntlconfigsvr): Using this file, the system administrator on the customer site can set these parameters: the network protocol, Sentinel Keys License Monitor HTTP.

Issue2: Multiple IP addresses in the SNTLCONFIG.XML

Resolution

You can specify multiple IP in sntlconfig.xml file.

Few points to be noted:

- > In sequence of IP addresses the application will find the key.
- > It will use the 1st IP address in the SNTLCONFIG.XML to get a license and if it can not then it will use the 2nd IP address in the SNTLCONFIG.XML etc until the protected application can get a license from multiple back up Protection Servers.
- > It will not go further incase Server is down from which License has been taken.
- > SHELL protected application do not automatically try to get the new license from different back up servers whose IP addresses are listed in SNTLCONFIG.XML.

Below is the syntax for defining the IP addresses in the SNTLCONFIG.XML configuration file.

```
<ContactServer>  
192.168.100.110  
192.168.100.112  
192.168.100.124  
</ContactServer>
```

Issue3: File types supported by the "Hide import symbols" option?

Resolution

The Hide import symbols option (under the Security tab) cannot be applied to the following file types:

- > Dot NET
- > Visual FoxPro

- > Director
- > Power Builder
- > Applications that use SmartHeap DLLs
- > When you are using data file encryption option

Issue4: Memory of Sentinel Hardware Keys

Resolution

Sentinel Hardware keys, total memory – 8K

Detailed break-up:

4K – utilized for license loading and physical to logical mapping

4K – cell based – Total 256 cells where each cell = 16 bytes

1792 bytes – programmable and directly addressable by developers

+ 256 bytes – preprogrammed by SafeNet which includes Developer ID, Serial number, etc.

= 2K

The other 2K is mirrored of the above 2K for high assurance and integrity.

Toolkit information regarding memory:

- 1120 is maximum size a single license template can contain
- 1792 not 1796 is the maximum size of multiple license templates programmed onto the token or grouped.

Issue5: File Types Supported by SHK Shell

Resolution

File Types and Application Supported for Encryption/Decryption:

- > DOC WordPad, MS Word
- > RTF WordPad, MS Word
- > HTML Internet Explorer, MS Word
- > GIF Internet Explorer, MS Word
- > JPEG Internet Explorer, MS Word
- > TIFF Internet Explorer, MS Word
- > BMP Internet Explorer, MS Word
- > PDF Internet Explorer, MS Word
- > PPT MS PowerPoint
- > XLS MS Excel
- > MDB MS Access

Issue6: Error#223 (SP_ERR_TIME_CHEAT) and not able to program the key again

Resolution

Cheat Counter must have reached 0.

- > Go to Update Manager stage. Make sure correct license template is loaded for which the key in field was programmed.
- > Add action, select "Sentinel/License Key"
- > In add action; select the correct system date in "Set device date" and value you want to program in cheat count for future.
- > Go to Key Activator tab
- > Send your client utility "Secure Update" and ask him to open the same with user i.e. end user or sentinel key attached
- > Ask to Click Generate Request Code, save and send it to you via email
- > Now you return to Key Activator and load the received request code file
- > Select the action and generate the upgrade code with Developer Key attached to machine
- > Send upgrade code back to your colleague. In secure update utility he can browse the upgrade code and Activate application with end user i.e. sentinel key attached
- > Now deactivated application could be run again.

Issue7: Sentinel Hardware Keys 1.2.0 cannot read templates generated by SHK 1.0.3.104

Applies to

Templates (with update actions defined) created and saved under SHK Toolkit version 1.0.3.104. The SHK 1.2.0 SDK is able to load license templates created by SHK 1.0, 1.0.1, 1.0.2 and 1.0.3 Toolkit. The SHK 1.2.0 toolkit is also able to read license templates created by the SHK 1.0.3.104 patch unless you are not using "Update Actions" defined in the license.

Issue

After upgrading to SHK 1.2.0 from SHK 1.0.3.104, the Toolkit no longer shows the "License Designer" tab if a license (having update actions defined) is present in C:\Documents and Settings\

Cause

The SHK 1.0.3.104 patch used a different format to store license templates to earlier versions of the SDK. As a result the SHK 1.2.0 Toolkit is not able to load license templates having update actions, which were created by 1.0.3.104. However, the new SHK 1.2.0 is fully backward compatible with SHK 1.0, 1.0.2, and 1.0.3, but not with SHK 1.0.3.104

Issue8: Application Startup Time

Issue

You have an application that takes about 3 seconds to start when unprotected. When shell protected, it takes about 15 seconds to start. How can you control the shell options to effect the protected application startup times?

Resolution

The Multi-layer option has a large effect on application startup time.

- > Open toolkit
- > Go to License Designer stage
- > Select the Shell tab
- > Click Edit
- > Select the Security tab
- > Under Advance Options, go to Multi-layer level option
- > Decrease the selected level

Issue9: Time/Date Tampering

Issue

You are using Sentinel Keys Toolkit to shell an application with a Lease License, and Make Keys works successfully. Now, for testing purposes when you set your system date forward, a time tampering error occurs and you can no longer generate keys or protect other applications with the toolkit. This happens even after you set the date on your system correctly. How can you rectify this error?

Resolution

Solution for Keys:

- > Remove the USB key.
- > Set your system's date and time and then reinsert the USB key.
- > Start the protected application.

Solution for Toolkit:

- > For a toolkit error, open toolkit
- > Build a new template
- > Rebuild the original template.

Issue10: Backing up the Templates, Features, and Groups

Resolution

By default, there are two directories to backup the templates, features, and groups generated in the toolkit.

Programs are stored in the directory, <installdir>\Sentinel Keys Toolkit.

The license group files are stored at: <Personal folder>\MyDocuments\Sentinel Keys <version>\My License Groups.

Note - The license group files are stored at: <Personal Folder>\Documents\Sentinel Keys<version>\My License Groups on Windows Vista.

The license template files are stored at: <Personal folder>\MyDocuments\Sentinel Keys <version>\My License Templates.

Note - The license template files are stored at: <Personal Folder>\Documents\Sentinel Keys<version>\My License Templates on Windows Vista.

You can change the default License and Group templates directories by using the following steps:

-> Open Toolkit

-> Navigate to Options > Setting > Working Folder > Folder Settings

- > Enter the new paths for License and Group templates respectively, and click Reset.
- > Click OK.

Issue11: The application receives a SP_ERR_INVALID_LICENSE error

Resolution

This error could occur when the license is timed-out. The license time interval is probably set too short. You can recommend to your customers:

- > Use client-side configuration file sntlconfig
- > Set a longer license time interval.

On Linux, this error will also appear when the terminal clients are trying to obtain a license using SP_STANDALONE_MODE.

Issue12: How many files can be encrypted using Shell?

Resolution

You can specify as many files as you want for applying the Shell layer. However, you can encrypt/decrypt a maximum of 50 files at a time.

To encrypt more than 50 files with an application, you need to create multiple Shell features, all of which use the same encryption seed. For example, if you need to encrypt 125 files:

- > Open Toolkit
- > Go to License Designer stage
- > Create 3 shell features
- > In 1st feature give 50 files to be encrypted
- > In 2nd feature give 50 more files
- > In 3rd feature give rest of the 25 files
- > Use the same encryption seed that you used for the first 50 files, if you want the files to use the same encryption.

[Table of Contents](#)

Java specific Issues

Issue1: SHK License Manager crashes when a distributor key is inserted with Java version 6, Update 5 installed.

Details

Running SHK License Manager 1.0.3 or 1.2.0, when you insert a distributor key, the program crashes. The crash occurs with Java version 6, Update 5, Build 1.6.0_05-b13 installed. This works fine with Java version 1.6.0 Build 1.6.0_03-b05 installed.

Resolution

- > Uninstall Java 6, Update 5 patch.
- > Start > Settings > Control Panel > Add or Remove Programs
- > Select Java(TM) 6 Update 5 and click Remove

There is another work around besides uninstalling the latest Java version.

- > Open regedit.
- > Choose HKEY_LOCAL_MACHINE\SOFTWARE\JavaSoft\Java Runtime Environment, change CurrentVersion to 1.6.0_03.

Issue2: Sentinel Keys Toolkit 1.2.0 will crash if calling SFNTGetLicense in API Explorer with JRE 1.6 update 4 or later

Resolution

This problem has been resolved in version 1.2.0.1 and patch is available under THOR DOC Id 6910

Table of Contents

Field Activation Issues

Issue1: Can I use the same request code (.req) file to generate an update code (.upw) file, and a license addition (.nlf) file?

Resolution

No, you are not advised to do so, because when the request code is generated, the value of device update counter is stored in the *.req file which is incremented every time you follow any of the following operations on the token:

- > Formatting before adding new licenses using *.nlf file.
- > Updating cheat counter value.
- > Updating Last known date and time (LKDT) value, once the lease operation has been performed.
- > Updating user limit value.

Now, consider a scenario wherein you applied the *.req file to generate a *.upw file, and later used the same *.req file to generate the *.nlf file. The device update counter value in the *.req file may not match its value on the token if you have performed any of the operations listed above, hence restricting the process of applying the license addition code (*.nlf) file.

Table of Contents