Sciifii

Credits

Sciifii has been done by TeamWiigen:

* Coders: Arasium, Teton, Fanta, SkinnerDev
* Testers: JeanMi, Jicay, Thetataz, Vlad, Oranda (and many others)

Greetings

Waninkoko, for all job he’s done on the Wii and because he has always answered/helped us when we need some infos about his cios.

Da\_letter\_a and Damysteryman for their cioscorp/Darkcorp knowledge.

Everybody who has helped us and we have forget ☺

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# Introduction

Birth of Sciifii

In 2009, Arasium has done a guide to helps everybody who wants to hack their Wii. This guide was quite good and like every good job, a lot of people has copy/paste it on warez boards or other forums without including links to the original guide (for French people, you can find on Wiigen forum, under the member tutorial section).

But, the worst isn’t these thieves. It is the noobs who aren’t able/don’t want to read the guide. As everybody knows, always repeating the same thing is very boring. So Arasium has the idea of a homebrew that will do the entire job. No more stupid questions (after Sciifii v1 or v2 release, we realize that we can’t avoid stupid questions☺), no more reading and overall no need to always update the guide.

So the Sciifii v1 project was born. This first version wasn’t very powerfull due to a lack of configuration, some bugs etc…. But now, Sciifii has evolved!

Enjoy our job

The goal of Sciifii

A lot of people see a hack tool when they take a look to Sciifii. But Sciifii isn’t only this. Our goal was to create a very flexible application that can be used for a lot of things.

So yes, Sciifii is provided with a configuration file wich will hack your Wii. But it is very easy to create more apps (for example of firmware downgrader can be done very quickly).

Actually, we can describe Sciifii has a tiny task sequencer. All the application can be modified in the xml. And **this** is the power of Sciifii.

# Changelog

## V4

* You can specify a region on each step in order to prevent step execution based on wii region
* SystemUpdater task removed. Now we are using CompositeInstaller and the new region option
* MemoryPatcher task added in order to use the AHBPROT on 4.3 wii
* Identification has know his own task
* You can skip some exceptions (ie -1035)

## V3

* Added a file manager to export some patches/datas from the executable
* Added a log system
* Removed the flags (it was a stupid idea done for the v2)
* The cios installer was rewritten and the xml was modified (fully customizable)
* Cmios included (done with the new ciosInstaller)
* Cios updated
* CorpInstaller and SystemUpdater have their one configuration (so you can use them more than once)
* Added the CompositeInstaller in order to group some process
* Added a file system step
* Now, fully customizable in the xml. No more embedded datas.
* The libs were rewritten
* And some bug fixed ☺

# How to use Sciifii

## Prerequisites

First, you need an internet connection. Sciifi use some files we can’t give you because there are copyrighted. But Sciifii can download them from Nintendo update servers. You can use your Wii internet connection or a computer.

Then you need a brain (I say that, because some people will always try to not use it), an sd card and a Wii ☺

## Installation methods

Sciifii needs to download items from the network. So you can launch Sciifii and he will automatically download all the needed files for you.

But keep in mind that you can also use our pc application to download these files. In fact, using the pc tool is a lot quicker. So perhaps you will prefer our pc app (or perhaps your Wii isn’t connected to the network☺)

## Sciifii modes

When you start Sciifii you will see a menu. This menu will show all the available modes. In Sciifii, a mode is a default installation option set. In fact, each mode will automatically activate/deactivate some options.

We provide these modes for users who don’t care about how Sciifii does his job. But we suggest you to take a look to the advanced mode (at least, just to have an idea on what Sciifii really does on your Wii)

* Hack your Wii ! (Light Mode): this will only install the waninkoko cios rev17b and the priiloader.
* Hack your Wii ! (Full Mode with LoaderGX): This will do the same that lite mode but it will also install the GX USB Loader.
* Hack your Wii ! (Full Mode with Wiiflow): This will do the same that lite mode but it will also install Wiiflow.
* Unhack your Wii: This mode will remove all cios from your Wii and will update it to firmware 4.3. No channel will be removed. So I suggest users to remove their channels before using this (with any title delete for example). Once the uninstallation done, you can remove the HBC and/or bootMii with Hackmii installer.

## Sciifii options

Like explained just above, Sciifii modes will only active some options. You can see this options in the advanced menu. I will describe here every option you can find in the config file provided with sciifii. You can do a custom installation selecting the required options in the advanced menu.

* Install cios 38 rev17b: This will install the cios38 rev17b from waninkoko. The installation will be done under the ios36. So you need an ios36 with the trucha bug (or use the first option).
* Update: This will update you Wii to the firmware 4.2. The installation is done under the cios249 (so be sure to have it or activate the cios option). The cioses (ie 249, 250 etc..) won’t be modified.
* Remove the cioses: This will removed the cioses with the original ioses from Nintendo.
* Priiloader: this will install the priiloader and the hack.ini file on your sd card.
* Corp: It will install the cioscorp/darkcorp on your Wii. This includes the cmios, but, if you want the cios56 and 58, you need to extract them from GH5/RB and a game wich used the cam.
* GXLoader: It will install the GX Loader on your sd and the GX Loader channel on your Wii.
* Wiiflow: The same as GX Loader but for Wiiflow.

Here is a summary of the options activated in each mode:

|  |  |
| --- | --- |
| Hack your Wii ! (Light Mode) | cIOS + Preloader |
| Hack your Wii ! (Full Mode with LoaderGX) | cIOS + Preloader + GXLoader |
| Hack your Wii ! (Full Mode with Wiiflow) | cIOS + Preloader + Wiiflow |
| Unhack your Wii | cIOS + Update + Uninstall |

## Error resolutions

Sciifii can work on a lot of Wii. But, it can encounter some problems with some configurations. Generally, these problems are due to an old cioscorp.

The cioscorp increase the ioses revision number to their max value. So we can’t manipulate them easily.

If the error persists, you can send us a mail with your ip. We will take a look at our logs in order to identify what happens.

# Sciifii customization

As already explained, Sciifii is just a task sequencer. We will see here how to modify the configuration file and we will describe each option of the configuration.

Actually, the configuration file need to be stored on sd:/sciifii/ folder. Perhaps we will update our app to use another device (but you will always need your sd to use bannerbomb or any other hack).

Be carefull, every item in the configuration file is case sensitive.

## Global structure

First, the root tag must be called “sciifii”. Sciifii is composed of logs, files, modes, options, steps, a disclaimer and some options. Here is a table of the “sciifii” tag structure:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Element type | Cardinality | Type | Format | Remarks |
| Version | Attribute | 1 | Int | Decimal | This must match the Sciifii version. If not, Sciifii will refuse it. |
| MenuMessage | Attribute | 0-1 | String | - | This message will be prompt on the menu. |
| AllowAdvancedMode | Attribute | 0-1 | Bool | true/false | True is the default value. If this is set to false, the advanced won’t be available. |
| workingDirectory | Attribute | 0-1 | String | usb:/ or sd:/ | This element will be used as a temp directory. All downloaded files will be putted here by default.  sd:/sciifii/temp is the default value. |
| logs | complex node | 0-1 | log | - | See the log xml element |
| files | complex node | 0-1 | file | - | See the file xml element. |
| modes | complex node | 1 | mode | - | See the mode xml element. |
| options | complex node | 1 | option | - | See the option xml element. |
| steps | complex node | 1 | - | - | See the description of available steps. |
| Disclaimer | node | 0-1 | String | - | This text will be displayed in the disclaimer |

## Log section

Now, it is possible to log what Sciifii does. There are actually three different versions of the loggers: a file logger, a gecko logger and a web logger.

Three types of events are logged: errors, warnings and information. For the file and gecko loggers, the logs are composed of strings (send to file or gecko).

But the web logger is quite different. It consists of an http call with some parameters. You need to provide the page to call, but the parameters can’t be defined. If you want to create your own web page you need to catch these parameters.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Element type | Cardinality | Type | Format | Remarks |
| type | Attribute | 1 | String | gecko  file  web | This defines the logger type to use. |
| category | Attribute | 0-1 | String | error  warning  info  all | This indicates what kind of message will be logged by the logger. “all” is the default value. |
| path | Attribute | 0-1 | String | usb:/ or sd:/ | This will be used by the file logger in order to create the log file. |
| url | Attribute | 0-1 | String | A valid internet url (http get) | Used by the web logger.  The parameters send to the web page are: line, message, file, application and version. |

## Files section

In the v3 of Sciifii, we have created a file manager. The goal of this manager is to download and store some required files. In the previous version of Sciifii, a lot of files were embedded in the homebrew. This was a bad idea, because the dol became very heavy and we can’t update Sciifii without recompiling it. The file manager is configured with the files section of the configuration file. Each managed file is described with a “file” element in the files section.

If the file needs to be downloaded, the FileManager can also validate it with the sha algorithm.

If Sciifii asks for a file that isn’t in the FileManager, the file manager will try to find it using the working directory and the key.

Here is a description of the attributes of the file element:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Type | Cardinality | Format | Remarks |
| url | String | 1 | a valid internet url | This url will be used to download the file |
| sha1 | String | 0-1 | a valid internet url | If provided, this url needs to be a file containing the hash of the file to be download. |
| key | String | 1 | Don’t use / in this string | This is a key used to get the file from the file manager. |
| path | String | 0-1 | sd:/ or usb:/ | This is the full path were the file need to be stored. If the file is missing, the file manager will download it.  If the path is not provided, Sciifii will create the path like this:  workingDirectory/key |

## Modes section

This section will describe all the modes available on Sciifii. These modes will be displayed in Sciifii menu. Each mode is represented by a mode element in the elements section.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Type | Cardinality | Format | Remarks |
| text | String | 1 | - | This is the text displayed on screen |
| options | String | 1 | A list of options name. | Each option name must be separated by |.  Every option in this attribute must have a corresponding option in the options section. |
| flag | String | 0-1 | - | This is a flag than can modify Sciifii execution. Actually, the only flag used is Uninstall. |

## Options section

The options are items we can switch on/off. These options are here to define the tasks need to execute. The modes are custom sets of options. We can see the options to be switch on in the options attribute of a mode element.

If the advanced mode is available, we will see in the advanced menu these options.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Type | Cardinality | Format | Remarks |
| name | String | 1 | - | The name is the identifier of an option. |
| text | String | 1 | - | This text will be displayed in the advanced menu. |
| hidden | Boolean | 0-1 | true/false | Default value is false. If true, the option won’t be visible in the advanced menu. |

## Steps section

This section is very important. It is in this section we will define all the tasks of the sequencer. The number and the types of tasks have no limits.

So this chapter will detail every available step.

But, before starting the descriptions, you have to know that every step has an “option” attribute. This attribute indicate to Sciifii what are the options that can switch on this task. If one (or more) of this options are on, the task will be executed. If no option is defined, the task will be always executed. This attribute is optional and the default value is an empty string.

Each task has also a region attribute. If you define regions in the tag, the step will be launched only if the Wii is from one of the defined regions.

### TitleDowngrader

This task will downgrade an ios. In order to do that, it will start to install the latest ios version and modify the tmd in the Wii temp folder to modify the ios revision to 0. After this operation, we can install an ios with a higher version.

The tag name is “TitleDowngrader” and here is its content:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | Remarks |
| id | attribute | 1 | u64 | hexa, without 0x | This is the title full id. |
| revision | attribute | 1 | u16 | decimal | This is the wanted revision |

### IOS reloader

The IOS reloader indicates that Sciifii need to reload under another ios. There isn’t any verification on the ios. So be sure that the ios isn’t a stub.

The tag is “IOSReloader” and here is the content description:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | Remarks |
| id | attribute | 1 | u32 | decimal | This is the ios number (not the full id) |

### Identifier

This is used to switch user identification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | Remarks |
| user | attribute | 0-1 | u16 | 0 (in the future, 1 will be accepted) | 0 will identify Sciifii as SU after the reloading |

### Cios installer

This is the more complicated task. This task will allow you to patch an ios and install it on your Wii. Near every cios can be done with this task. If you don’t really know what you are doing, we suggest you to don’t use this.

A cios is composed of many items. First, the original ios is patched with some simple patches. These patches will just replace a binary pattern by another one.

But a cios is also composed of plugins and additional modules. It is possible to insert them as well. We don’t write this document to explain you how the hack is done, but how Sciifii works. So we won’t deep furthermore into the ios hack.

Before installing the cios, this task will remove the existing ios (to avoid revision conflict). So you need to be under an ios with enough privileges.

The cios installer tag is “CiosInstaller”:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| source | attribute | 1 | u32 | decimal | This is the ios base number |
| revision | attribute | 1 | u16 | decimal | The ios base revision |
| slot | attribute | 1 | u32 | decimal | The slot where to install the cios |
| ciosRevision | attribute | 1 | u16 | decimal | The revision of the cios |
| modules | complex node | 0-1 | module | - | This is the place where you need to describe all the additional modules |
| plugins | complex node | 0-1 | plugins | - | You need to put the plugins here |
| patches | complex node | 0-1 | various patches | - | patch list |

#### Cios modules

A module is an elf file compiled with arm compiler. The specified modules will be inserted to the ios and the task will do all manipulations job for you. This xml part is quite simple.

A modules tag is “module”:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| file | attribute | 1 | string | - | It refer to a file manager item |
| position | attribute | 0-1 | u16 | decimal | If the module needs a specific position in the ios, you can specify it. |

#### Cios plugins

A plugin is a piece of code we insert in an existing module/elf. With Sciifii you can use what we name additive plugins (the code will be added into the module as a new section or in an existing section) or replacement plugins (the plugin will replace an entire module section).

We can make the distinction between the two different plugins type using the header tag. The header tag will describe how we insert a new plugin. If the header tag isn’t provided, the plugin will be inserted in an existing section.

We will describe the “plugin” tag, then we will try to explain how Sciifii detects the different plugins type:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| dest | attribute | 1 | string | - | The plugin will be applied on the ios module specified in the dest attribute (FFS ES, DI etc…) |
| file | attribute | 1 | string | - | Reference a file manager item wich contains the plugin. |
| offset | attribute | 0-1 | u64 | hexa without 0x | This indicates the plugin position in its section. The good section will be automatically found. |
| bss | attribute | 0-1 | u64 | hexa without 0x | This defines the new bss size. |
| segment | attribute | 0-1 | u32 | decimal | It indicates wich section to replace. 0 to create a new section. |
| header | node | 0-1 | - | - | This describe the program header for the new section |
| handle | node | 0-n | - | - | This is patches required to enable the plugin. |

The header node is very important. Sciifii use this to decide if the plugin is a piece of code to include in an existing section or if the plugin is a full new section (a section is an elf part. You can find it using power-pc-eabi-readelf –a file).

Is header defined?

The plugin will be added to an existing section.

Bss and offset are required.

No

The plugin is a full section.

segment is required.

Yes

Segment = 0 ?

New section

The section will be replaced.

Yes

No

#### Cios patches

This section is simple. Some usual patches are already defined in Sciifii. We call them prebuild patches. You can insert them in the ios using the “prebuild” tag. You must provide the name attribute to indicate the prebuild patch to use. Here is a list of prebuild patches:

* ES\_HashCheck\_Old
* ES\_HashCheck\_New
* ES\_Identify
* ES\_OpenTitleContent1
* ES\_OpenTitleContent2
* ES\_ReadContent
* ES\_CloseContent
* ES\_SetUIDCheck
* ES\_TitleVersionCheck
* ES\_TitleDeleteCheck
* ES\_MEM2Protection
* FFS\_PermsCheck
* DIP\_UnencryptedLimit
* DIP\_EnableDvdVideo
* KoreanKey\_EnablePatch

But you can also define your own patches using the “SimplePatch” tag:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| module | attribute | 0-1 | string |  | This is a module name (ES, FFS etc…). If provided, only this module will be patched. |
| pattern | attribute | 1 | data | hexa (with 0x), separated by comas | This pattern will indicate where to apply the patch |
| patch | attribute | 1 | data | hexa (with 0x), separated by comas | The patch must have the same size as the pattern. |

### Composite installer

This task is very simple. This is only a task group. You can add (as child nodes) some tasks. The goal of this item is to apply an option at a group of tasks. The better example is the GXLoader installation.

You can provide a name to this task. The name will be used during the progression report.

### Title task

This allows you to manipulate Wii titles. You can install wads, extract titles as wad, decrypt tiles etc…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| action | attribute | 0-1 | enum | -install  -uninstall  -pack  -extract  -decrypt | Install (default): will install a wad or a nus title, depends of the source.  Uninstall: will uninstall a title based on source information.  Pack: download a title from nus and pack it as wad.  Extract: extract a title from the Wii and pack it as wad.  Decrypt:Extract, decrypt and save a title from the Wii. |
| wad | attribute | 0-1 | string | - | Describe a wad source (file manager). Used for Installation or Uninstallation. |
| id | attribute | 0-1 | u32 | hexa | This is a title id. It can be used for for every action. |
| revision | attribute | 0-1 | u16 | - | Used in Pack or Install. It is the title revision (0 for the latest one). |
| path | attribute | 0-1 | string | file path (sd or usb) | A wad path if Pack or a folder if Decrypt. |

Title installation can be done downloading titles from nus or extracting titles from wad. It depends on the defined attribute. You mustn’t define the wad attribute and the id attribute because Sciifii won’t be able to choose between nus and wad.

For the title uninstallation, it’s the same. The only difference is that Sciifii won’t download any title from nus. We only need the titleId to delete it. If you provide a wad file, the title id will be extracted from the wad.

In the other case, the wad attribute will not be used. If you need to define a wad path (for example, with the Pack action), you need to use the path attribute.

### File downloader

This task is very simple. The only goal of this task is to download a file managed by the file manager.

### Wad Batch installer

This task is very simple too. Sciifii will inspect the folder defined in the “folder” attribute of the “WadBatch” tag, and it will install all these wads. You can define the attribute action with the value “uninstall” to uninstall all the wads in the folder (non installed wads will be skipped).

### File system manipulation

We have created a special task to manipulate the file system (Wii and sd or usb using fat). You can copy, move and delete files and folder.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| target | attribute | 1 | string | path | - |
| destination | attribute | 0-1 | string | path | - |
| type | attribute | 1 | enum | -file  -folder | This indicate if target and destination are folders |
| recursive | attribute | 0-1 | bool | - | Default value is false. This is used for folders manipulation (copy/delete) |
| action | attribute | 1 | enum | -move  -copy  -delete | - |

The move action will move the file or folder (the target) into the destination folder. If the destination folder doesn’t exist, it will be created.

The copy action will do the same, except that the source won’t be deleted after the copy. For folder copy, you can specify if the copy is recursive or not.

The delete action will delete the target directory or file. For folder deletion, you can use the recursive attribute. If recursive is set to false and the folder isn’t empty, you will have an error.

For the directory move or copy with recursive attribute, you can create the target folder in the target directory.

Example:

Copy sd:/foo sd:/bar => will copy all the content of foo into bar

Copy sd:/foo/ sd:/bar => will copy foo into bar. So you will have sd:/bar/foo/content

### MemoryPatcher

This is very simple. It’s like the ciosInstaller but it’s modify the running IOS and it doesn’t install anything.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| name | element type | cardinality | type | format | remarks |
| patch | element | 0-n | Complex | - | See the SimplePatch element in the CiosInstaller but without the module attribute. |