Admin Tools for Joomla 4

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Abstract

This book covers the use of the Admin Tools site security component, module and plugin bundle for sites powered by Joomla!™ 4. Both the free Admin Tools Core and the subscription-based Admin Tools Professional editions are completely covered.

Table of Contents

Chapter 1. Getting Started

1. What is Admin Tools?

Admin Tools is a security component, i.e. a software solution which will help you tighten the security of your Joomla! site. Moreover, it has several features which will help you enhance the performance of your site and make your life administering the site a bit easier.

Admin Tools is written with Joomla! best practices in mind, using Joomla's extension development framework (“core MVC”). It uses a native Joomla! plugin to apply its security and performance enhancing feature. It does not touch Joomla's core files ("core hacks").

Admin Tools comes in two editions, the free of charge Core edition and the subscription-only Professional edition. The Core edition only has basic site management features, without any focus on security. The security features can only be found in the Professional edition.

A summary of the features of Admin Tools and how they relate to each edition can be found on our site [https://www.akeeba.com/products/admin-tools.html].

1.1. Disclaimer

Security extensions —like Admin Tools— are designed to help you enhance your site's security, not make it invulnerable against all hacking attempts. Whereas it will make it harder for a potential attacker to obtain information pertaining your site and will give them a hard time attacking your site, there is nothing that can stop a determined attacker with plenty of resources from hacking a site with known security issues. For instance, if you have an outdated Joomla installation or a vulnerable component installed on your site there is very little which can be done to stall and rarely stop a determined attacker. Therefore a security extension should be viewed as one of the many tools in the arsenal of the defender, not as the *only* tool.

We are aware that some developers may market their products as a "complete protection" for your site, which is technically impossible, plain and simple. If such a magic solution existed would they be selling it for a few dozen dollars a year to everyone instead of asking for millions of dollars per year to protect very high profile targets (large corporations and government agencies)? Exactly.

There's a favorite analogy here. Security software is like a bulletproof vest. Soldiers don't wear it for total invincibility against all possible attacks in a battlefield. A lucky shot in an area not covered by the vest; a high power, penetrating round; or an explosion could still kill them. They are wearing it because what is most likely to get them is what the vest can stop.

In the end of the day *you* are ultimately responsible for the security of your site, employing a comprehensive approach to security including sane personal security practices. Installing and configuring Admin Tools is meant to be *part* of your security regimen. At the very least you are expected to take frequent backups, stored in safe locations outside of your server; apply security-conscious password management; maintain a secure working environment (as in: if your computer is full of malware your site is as good as hacked no matter if you use Admin Tools or not); and keep an eye for any abnormal behaviour on your site.

Finally, we are legally obliged to draw your attention to the warranty and liability waiver Sections 15 through 17 of the software's license, copied here for your convenience:

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER

PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

1.2. The philosophy

Admin Tools is a tool which helps you tighten the security of your site. Admin Tools, like every security software, is not something that you install and immediately become invulnerable to hackers. If this point is unclear you are welcome to read the previous section.

Admin Tools is a very capable security solution which can protect you against many different types of common attacks. However, there are some limits to what it can do. You cannot install an old version of Admin Tools on an obsolete version of Joomla we have stopped supporting and expect that site to be impregnable by hackers. Old versions of Joomla and its third party extensions most likely have security issues which, from the point of view of a web application firewall, look like legitimate requests. These attacks cannot be addressed unless the vulnerable Joomla core or third party extension code itself is updated. That is why we will only officially provide support to the latest and the previous Joomla version family. There's no point trying to secure an out of date site.

Finally, please keep in mind that your site evolves over time. As a result, you may have to adjust your Admin Tools settings over time. Sometimes updating a third party extension will break something because its author is doing something ill-advised that Admin Tools protects you against (yes, some developers even manage to make their software behave in the same way malware does, mainly because they are unaware of those malicious patterns). Sometimes you may install something new which needs a few adjustments in the protection to make it work. This is all normal. Security is a process, not something you install once and forget about it.

2. Server environment requirements

The system requirements with regards to PHP and Joomla versions are listed on our site.

We support and test with fairly recent versions of the Apache, NginX and Microsoft Internet Information Services (IIS) web servers.

We support and test with the MySQL versions supported by Joomla. Very limited support for PostgreSQL is provided but we do not routinely test with it because of its minuscule share among server technologies across Joomla sites.

With regards to browsers, we strongly advise you to use the latest published version of a major browser such as and in no specific order: Mozilla Firefox, Microsoft Edge, Google Chrome, Safari, Brave, or Opera. Other browsers may work but we cannot test with them. We no longer support Internet Explorer at all.

3. Installing Admin Tools

Installing Admin Tools is no different than installing any other Joomla!™ extension on your site. You can read the complete instructions for installing Joomla!™ extensions on the official help page [https://docs.joomla.org/Installing_an_extension]. Throughout this chapter we assume that you are familiar with these instructions and we will try not to duplicate them.

3.1. Installing or manually updating the extension

Please note that installing and updating Admin Tools (and almost all Joomla! extensions) is actually the same thing. If you want to update Admin Tools please remember that you **MUST NOT** uninstall it before installing the new version! When you uninstall Admin Tools you will lose all your settings. Instead, simply install the new version on top of the old one. Joomla! will figure out that you are doing an update and will treat it as such, automatically.

A manual installation is fairly straightforward. Go to our site's Download page and download the software. Then go to System, Install, Extensions, Install from Folder and use the Browse button to locate the ZIP file you downloaded.

Warning

Safari automatically extracts the ZIP files you download. If you see a bunch of ZIP files being downloaded instead of a single file with a name similar to pkg_admintools-1.2.3-pro.zip go to Safari's Preferences page, General tab and uncheck the Open “safe” files after downloading checkbox.

Tip

If you find that after installing or updating Admin Tools it is missing some features or doesn't work, please try installing the same version a second time, without uninstalling the component. The reason is that very few times the Joomla! extensions installer infrastructure gets confused and fails to copy some files or entire folders. By repeating the installation you force it to copy the missing files and folders, solving the problem.

3.1.1. Troubleshooting the installation

Please note that extensions installation is performed by Joomla itself, not code that we have written ourselves. If you have a problem installing a Joomla extension of ours the root cause is in Joomla! and the way some of its functions work.

We cannot provide support for Joomla itself. If you run into an installation issue please consult the official Joomla Forum and the official Joomla documentation.

Below you can find some solutions for common issues. This information is provided as-is and we do not make any claim with regards to accuracy or completeness.

"Install path does not exist"

Joomla! requires the PHP Gzip and ZIP extensions to be installed. If either is not installed or if it's blocked then Joomla! will be unable to install extensions. Unfortunately, a cascade of unhandled errors inside Joomla! itself will cause it to come up with the unhelpful and disorienting "Install path does not exist" error message.

Solution: ask your host to enabled the GZip and ZIP extensions in PHP. Furthermore, ask them to make sure that they are not blocking the functionality of these extensions e.g. by using `disable_functions` or `disable_classes` in their `php.ini` file.

Please note that we routinely see hosts disabling functions `zip_open`, `gzuncompress`, `gzdeflate` and `gzdecode` for ostensible "security reasons". First of all Joomla! WILL NOT work properly when any of these functions is unavailable. Moreover and despite what your host tells you, disabling this functions does not increase your site's security in any conceivable way. If your host denies to unblock these functions please take your site to a different host that understands how server security really works.

"Unable to write entry" or "Unable to create destination" error

This error message comes from Joomla! and it means that there is a file or directory permissions issue. Unfortunately this message is very non-specific and provides no useful information for troubleshooting. This is something we reported to Joomla in September 2017 and was ostensibly fixed but internal issues in the way the extensions installer work still prevent the correct path from being shown.

In the meantime, all you can do is ask your host to make sure that all folders and files on your site are writeable by the user under which your site runs. This is not something you or us can do. Please do ask your host.

If this doesn't help it might mean that you have reached the file system capacity of your server. Please note that your account on the server might have several limits:

- Maximum total size of files and database data. This is the most common limit, e.g. your host telling you that you can use 10G of space in total. Please remember that this includes your database data. Moreover, keep in mind that "unlimited" is a marketing term, not reality. Usually you get up to a certain size limit and you have to ask for more, explaining why.
- Maximum number of files. This is usually NOT advertised. Many hosts will only allow you up to a maximum number of files, e.g. 100,000. If you try to exceed that count the file is not created / replaced, as if the permissions were not adequate to write to it. Please note that most times the host engineers will call it "inode count" because that's technically what they are limiting on your hosting user account. A file can consume one or more inodes, each inode essentially being the smallest chunk of contiguous disk space that can be allocated to a file (that's not very accurate but it's a well enough description to understand what an inode is).
- The physical disk size. All the aforementioned limits are great, but you cannot create files beyond the physical capacity of the disks on your server. Most modern hosts use virtualized, network attached storage to provide ever-expanding capacity on demand. However, some cheaper hosts and dedicated servers still have regular disks attached with finite storage limits.
- Also remember that your hosting control panel does not report the limit information in real time. You may have already exceeded your limits but your control panel not having been updated with this information.

If you are not sure about these limits please ask your host.

Upgrading from Core to Professional

In some cases we have seen that Joomla failed to copy all of the necessary files when upgrading from a Core to a Professional release or when installing a major update that spans major versions (e.g. 1.x to 2.y). If you believe this has happened to you please install our software twice in a row, without uninstalling it before or in between the subsequent installations.

Check your Joomla! and PHP version

We publish the compatibility of our software with Joomla! and PHP versions in the Compatibility page on our site. You can find a link on this page at the bottom of every page of our site.

Please remember that the PHP version your site is using **may be different than the PHP version your host reports in their hosting control panel**. If unsure, please refer to Joomla's System Information page. If you need to upgrade your PHP version please consult your host. The exact method to do that varies by host.

Checking your temporary directory

First, we will have to make sure that you are using a valid temporary directory. Many sites are configured to use the system-wide (/tmp) directory or an invalid directory, causing installation problems.

You can change your temporary directory from your site's Global Configuration page. You need to enter the full filesystem path to Joomla's `tmp` folder. This is typically something like `/home/mysite/public_html/tmp`. If unsure please ask your host. This information is not visible from within your site's administrator using any Joomla-provided feature and there is no way for us to know it.

4. Upgrading from Core to Professional

Upgrading from Admin Tools Core to Admin Tools Professional is by no means different than installing the component. You do not have to uninstall the previous version; in fact, you MUST NOT do that. Simply follow the installation instructions to install Admin Tools Professional over the existing Admin Tools Core installation. That's all! All your settings are preserved.

Important

When upgrading from Core to Professional you sometimes have to install the Professional package **twice**, without uninstalling anything in between. Sometimes Joomla! does not copy some of the files and folders the first time you install it. However, if you install the package again (without uninstalling your existing copy of Admin Tools) Joomla! copies all of the necessary files and performs the upgrade correctly.

5. Automatic updates

Admin Tools can be updated just like any other Joomla! extension, using the Joomla! extensions update feature. Please note that Joomla! is fully responsible for discovering available updates and installing them on your site. Akeeba Ltd does not have any control of the update process.

Note

This Joomla! feature requires that your server supports fopen() URL wrappers (`allow_url_fopen` is set to 1 in your server's `php.ini` file) or has the PHP cURL extension enabled. Moreover, if your server has a firewall, it has to allow TCP connections over ports 80 and 443 to `www.akeeba.com` and `cdn.akeeba.com`. If you don't see any updates or if they fail to download please ask your host to check that these conditions are met. If they are met but you still do not see the updates please file a bug report in the official Joomla! forum [http://forum.joomla.org/]. In the meantime you can use the manual update methods discussed further below this page.

Admin Tools Professional needs you to set up the Download ID before you can install the updates. Go to System, Update, Update Sites in your Joomla backend. Find the “Admin Tools Professional for Joomla” item. It will be marked with a ‘Download Key missing’ label. Click on the item's title. You can now enter your Download ID in the Download Key field. You can find your Download ID and/or create additional Download IDs on our site's Add-on Download IDs page after logging in. Kindly note that having a Download ID is necessary but not the only requirement; you need to have an active subscription to a product which includes Admin Tools Professional for Joomla on our site. If either of these two conditions is not met you will receive an error 403 when trying to install the update.

You can access the extensions update feature in two different ways:

- From the icon your Joomla! administrator control panel page. By default you will find the icon in the right-hand modules area, under the Update Checks header. When there are updates found for any of your extensions you will see the Updates are available message. Clicking on it will get you to the Update page of Joomla! Extensions Manager.

- From the sidebar of your Joomla! administrator click on System. On the new page find the Update area towards the bottom of the middle column and click the Extensions link. This takes you to the Update page of Joomla! Extensions Manager.

If you do not see the updates try clicking on the Find Updates button in the toolbar. If you do not see the updates still you may want to wait up to 24 hours before retrying. This has to do with the way the update CDN works and how Joomla! caches the update information.

If there is an update available for Admin Tools tick the box to the left of its row and then click on the Update button in the toolbar. Joomla! will now download and install the update.

If Joomla! cannot download the package, please use one of the manual update methods described below. If, however you get an error about copying files, folder not found or a cryptic "-1" error please follow our installation troubleshooting instructions [https://www.akeeba.com/documentation/troubleshooter/abinstallation.html].

If you get a white page while installing the update please try either the Built-in method (described above) or the manual update method (described below).

Updating manually

As noted in the installation section, installing and updating Admin Tools is actually the same thing. If the automatic update using Joomla!'s extensions update feature does not work, please install the update manually following the instructions in the installation section of this documentation.

Important

When installing an update manually you MUST NOT uninstall your existing version of Admin Tools. Uninstalling Admin Tools will always remove all your settings. You do not want that to happen!

Sometimes Joomla! may forget to copy some files when updating extensions. If you find Admin Tools suddenly not working or if you get a warning that your installation is corrupt you need to download the latest version's ZIP file and install it *twice* on your site, *without* uninstalling it before or in-between these installations. This will most certainly fix this issue.

If the error occurs again after a while, without you updating our software, please contact your host. Some hosts will delete or rename files automatically and without any confirmation as part of a (broken and unfit for purpose) "malware scanner / antivirus". Unfortunately, these scanners return a lot of false positives -innocent files mistakenly marked as malicious- but rename / delete them nonetheless, breaking software installed on the server. If you are on such a host we very strongly recommend that you move to a decent host, run by people who actually know what they are doing. It will be far less headache for you and would actually improve your site's security.

5.1. Troubleshooting the update

Like most Joomla extensions, our software relies on Joomla's built-in extensions updater. In simple terms, code written by the Joomla project, shipped with Joomla itself and running on your site is responsible for retrieving information about the latest available versions, determining whether an update is available, downloading the update package and installing it on your site. Akeeba Ltd has no control over that code.

Despite this not being our code, we do understand that our clients do come across problems with updates and need our help. The way the Joomla built-in extensions updater is written makes it prone to some easily preventable, common errors. Its error reporting ranges from unhelpful to non-existent. In an effort to help you, we've compiled and condensed all the troubleshooting we've done for years on our sites and our clients' sites.

We do understand that the instructions in this section are convoluted and complicated. We are afraid that this is the *simplest* form they can be reduced to. We'd like to assure you that they do not reflect on the quality of software *we* can produce. These instructions are necessitated by and reflect the way Joomla itself works.

If you were using our software between 2009 and 2016 you might remember that we were using our own code, Akeeba Live Update, to find, download and install updates to our software. It was a much better solution and much easier to troubleshoot; it would tell you exactly what to fix and ask you to click a button to let it verify the fix. Unfortunately, the Joomla Extensions Directory (JED) made it impossible to use ouw own updater code, even as an alternative to the Joomla built-in extensions updater, in 2016. Doing otherwise is a violation of JED's terms of service and would result in all of our extensions being unlisted. That's why we are now using the Joomla built-in extensions updater even though we know it's nowhere near as good as what we used to have. Sorry, folks.

5.1.1. Addressing server issues

In some cases you will see that Joomla cannot retrieve the latest version information or update package for our software, reporting it cannot connect to cdn.akeeba.com (extensions released after August 2020) or cdn.akeebabackup.com (extensions released before August 2020). Related to that, Joomla may report that it's unable to download the Professional edition's update package, saying it's unable to connect to our site www.akeeba.com (extensions released after August 2020) or www.akeebabackup.com (extensions released before August 2020). This can mean a few different things which all have to do with how your host is set up.

Our CDN and our site are accessible over HTTPS and use a valid, signed TLS certificate. At the time of this writing the TLS certificates are issued by Let's Encrypt and Amazon Web Services. The TLS certificates used for HTTPS on our CDN and site use the recommended SHA-256 hashing algorithm and the servers only support modern versions of the TLS protocol (at the time of this writing it's TLS 1.2 and later). If your host has an out of date Certification Authority cache or compiled PHP against an old TLS library which does not support modern versions of TLS your site will be unable to connect to our servers.

If this is not the case, please be aware that some hosts run a proxy server or a firewall which can either prevent or cache *outgoing* connections in front of their servers. Depending on how this is implemented it can cause two distinct types of problems.

The first problem is that your site might be unable to connect to our CDN and our server to retrieve the latest version information and the update package itself respectively. If this happens you need to ask your host to allow connections to TCP/IP port 443 (HTTPS) for www.akeeba.com and cdn.akeeba.com. If they ask you for an IP address please ask them to resolve these domain names from their server. The latter is a Content Delivery network (CDN) with hundreds of servers, powered by Amazon CloudFront, meaning that its IP address depends on where you are accessing it from.

The second problem is that when Joomla tries to retrieve the latest version information or an update file from our servers your host's proxy gets in the way and returns information it has cached. We explicitly ask for that information not to be cached, using standard HTTP headers, but some hosts choose to ignore web standards and do their own thing. Also worth noting is that your host should not interfering with HTTPS (encrypted) traffic, so all the more reason to be worried about their implementation in this case. Unfortunately, we have caught a few hosts doing that over the years.

None of these issues can be addressed by you or us. You will need to contact your host about them. Before you assume any of these issues are in play and if you are using the Professional edition of our software please do check that your Download ID is valid first.

5.1.2. Check the validity of your Download ID

Note

The information in this section only applies to the Professional edition. If you are using the Core edition you can skip over it.

If you are using the Professional version of our software we need to verify that you have an active subscription that gives you access to downloads of the software you are trying to update. We do that by means of a Download ID which has the format 0123456789abcdef0123456789abcdef (Main Download ID) or 12345:0123456789abcdef0123456789abcdef

(Add-on Download ID). In and by itself the Download ID does not carry any information about your subscription status. It is an identifier linked to your account on our site.

First, you need to check that you are using a valid Download ID. **Do not assume that your Download ID** is entered at all, or that it is valid. This kind of false assumption accounts for half of the update issues we are asked to help our clients with. Always check on our site. Log into our site and go to Add-on Download IDs from the top menu. Copy the Download ID. Go to your site's System, Update, Update Sites page and find the Admin Tools Professional for Joomla item. Click on it. Remove any existing content from the Download Key field. Then paste your Download ID into the Download Key field. Finally, click on the Save button in the toolbar.

Afterwards you need to go to System, Update, Extensions and click on the Find Updates button. This is necessary even if Joomla already reports an update being available for Admin Tools. You will then be able to select the Admin Tools update, if one is found, and install it with the Update button.

5.1.2.1. Check your subscription status

As noted above, the Download ID itself does not carry any information about whether you are allowed to download an update. This check is done on our server when it receives the Download ID along with Joomla's request to download an update. The check performed is simple: do you have an *active* subscription which gives you access to the software you are trying to download?

Do not assume that your subscription is active. It is possible that you missed an email warning you about the subscription expiring and a manual action to renew it being required on your part. This may even happen when you have a recurring subscription if our reseller, Paddle, cannot automatically charge your credit card / PayPal account for any reason. Or you may have simply let your manually renewing subscription lapsed or canceled your recurring subscription.

Always log into our site and go to the My Subscriptions page to check your subscription status. If your subscription has expired you can renew it. Once the payment is complete and accepted by our reseller you will be able to download the updates within the next 20' or less (typically: within seconds).

5.1.3. Updates are showing after installing the latest version

Sometimes you might see that Joomla reports that the version you have installed or even a previous version is available as an update. This can mean three things:

- Joomla's update cache is stuck. Click the Find Updates button.
- You have a server issue connecting to our CDN. See the information on addressing server issues.
- You have found a bug in Joomla's built-in extensions updater. You need to contact the Joomla! forum [https://forum.joomla.org]. Unfortunately there is nothing we can do about Joomla core bugs.

5.1.4. Updates not showing despite having an older version

Sometimes you may see that Joomla refuses to report the availability of a new version of our software. This can mean three things:

- The update site for our software is disabled. See the information on checking the update site.
- Joomla's update cache is stuck. Click the Find Updates button.
- You have a server issue connecting to our CDN. See the information on addressing server issues.
- You have found a bug in Joomla's built-in extensions updater. You need to contact the Joomla! forum [https://forum.joomla.org]. Unfortunately there is nothing we can do about Joomla core bugs.

5.1.4.1. Check the update site

First we are going to check if the Update Site is disabled. Go to the backend of your site. Go to the System menu item, find the Update area and click on the Update Sites link.

On that page you will see a list of the update sites for the extensions you have installed on your site. If you see our software in that list – you may have to search for it – make sure it's published, i.e. there's a green checkmark in the Status column. If it's not already published publish it now. If you had to publish the Update Site you also need to follow the instructions under Refresh the update cache for your updates to work.

If our software does not appear on that list you will need to click on Rebuild. Please note that in some cases using Rebuild may remove the Download Keys from some extensions' update sites. Do check all update sites of commercial software. If any of them reports that the Download Key is missing you will to re-enter its Download Key. Therefore it may be a good idea to print out all pages of the Update Sites (which do show the Download Keys) prior to clicking on Rebuild.

5.1.4.2. Refresh the update cache

Joomla does not download the latest version information every time you visit the Updates page. This would be too slow and bog down the servers of the third party developers providing this update information. Instead, it caches the updates for 1 to 24 hours (configurable), with the default being 6 hours. In very rare cases this updates cache may get “stuck” beyond this time limit and needs to be manually refreshed.

First try the normal way to get the update cache refreshed. Please follow all of the steps below in the exact order presented from a single browser tab without having any other tabs or windows to your site open. Please follow all of the steps even if you think that something is redundant; it's not and there is a reason we tell you to do it.

1. Go to the backend of your site.

2. Go to the System menu item, find the Update area, click the Extensions link.

3. Click on the Find Update button.

This will tell Joomla to get the up-to-date information about available versions for all extensions installed on your computer. If you do not see anything changing to the better you have hit a rare issue which involves another Joomla cache that is invisible even to the Super Users: the Joomla database query cache. Please follow all of the steps below in the exact order presented from a single browser tab without having any other tabs or windows to your site open. Please follow all of the steps even if you think that something is redundant or repetitive; it's not and there is a reason we tell you to do it.

1. Go to the backend of your site.

2. Go to the System menu item, find the Update area, click the Extensions link.

3. Click on the Find Updates button in the toolbar.

4. Go to the System menu item, find the Maintenance area, click the Clear Cache link.

5. Click on the Delete All button even if the list is empty.

6. Go to the System menu item, find the Update area, click the Extensions link.

7. Click on the Find Updates button in the toolbar.

If you still cannot retrieve updates for our software you need to check if you have a server issue. If that's not the case you need to check the update site since it might have been automatically unpublished by Joomla.

5.1.5. Miscellaneous troubleshooting and information

5.1.5.1. The update fails to download

If you are trying to update a Professional edition please check your Download ID and that you have an active subscription. Typically you will get an error message telling you that an error 403 or 500 was received when trying to download the update package. Whether you see that message or a generic download failure message depends on the version of Joomla you have installed on your site.

If this doesn't help you need to check if you have a server issue.

5.1.5.2. Updating with a third party service fails

Typically, third party site management services ask Joomla to provide the update information and install update on your behalf. Therefore the troubleshooting information in this section would solve both in-site and remote (via a service) extension updates.

If you can install an update by logging into your site's backend but NOT through a service you need to contact the third party site management service and report this issue. Unfortunately we cannot help with it. Third party services DO NOT ask us for permissions to implement an updater for our software and we have no control over it.

5.1.5.3. Manual update

As noted earlier in the documentation, a manual update is the same as installing the extension. Download the latest version from our site and install it on your site **without** uninstalling our extension.

5.1.5.4. Update installation problems

If your update does download but fails to install try the manual update method (installing the new version on top of the old one). If that fails, too, you should follow the instructions on the installation troubleshooting section you can read earlier in this documentation.

6. Entering your Download ID

> **Note**
>
> If you are using Admin Tools Core, the free of charge edition of Admin Tools, you do not need to and must not enter a Download ID. The Download ID is only required for the for-a-fee Admin Tools Professional edition.

Admin Tools Professional is the for-a-fee edition of Admin Tools with additional features. Downloading it, either for installation from scratch or as an update to an already installed but older version on your site, requires confirming that you have an active subscription which gives you access to Admin Tools Professional downloads. When you download the installation ZIP file from our site this means that you need to log in to our site first. However, when downloading updates through Joomla you really don't want to and usually cannot be asked to log in to our site.

Using your Download IDs on your clients' sites

Our software license allows you to use your Download IDs on the sites of your clients. However, you must tell your clients that:

- Downloads and support for the software covered by the Download ID is provided by you, not Akeeba Ltd.

- If they want to receive support and / or downloads directly from Akeeba Ltd they need to purchase a qualifying subscription on our site. In this case they do not qualify for the renewal discount.
- They are not allowed to use the Download ID on any other site or use the Download ID to download the software for any reason other than updating or reinstalling the covered software on the same site the Download ID was entered in. In other words, they cannot use the Download ID to install or update our software on any other site.

If you are no longer administering a site where you have entered a Download ID you must revoke or regenerate that Download ID. You need to do the same if you believe that your Download ID is being used by third parties in an unauthorized manner. Please note that unauthorized use of Download IDs could have consequences on your subscription with us.

Finding your Download ID

Download IDs come in two flavors, your main Download ID and Add-on Download IDs.

You can find your main Download ID in the My Subscriptions [https://www.akeeba.com/my-subscriptions.html] page of our site. We recommend using this Download ID only on your own site(s). This Download ID cannot be revoked, it can only be regenerated. If it's regenerated you will need to enter the new Download ID on all of your sites which can be a significant hassle.

You can generate an unlimited number of Add-on Download IDs without additional charge in the Add-on Download IDs [https://www.akeeba.com/download/add-on-dlid.html] page. Unlike the main Download ID you can revoke (disable) any Add-on Download ID at any time. As long as you only use one Add-on Download ID per site revoking or regenerating it will not affect the other sites' ability to download and install updates.

Entering your Download ID on a newly installed copy of Admin Tools

If you just installed Admin Tools on your site go to Components, Admin Tools. You will be shown a message at the top of the page that you need to enter your Download ID. The message includes a link to a page on our site where you can find and copy your main Download ID. It also displays instructions for entering it in Joomla's Update Sites page so Joomla can find and use it.

If Joomla! was already showing you that an update for Admin Tools is available prior to entering your Download ID please remember to click on the Find Updates button in Joomla's Update page BEFORE trying to install the update to Admin Tools.

Enter or view your Download ID

Joomla! 4 provides a centralised download key management interface for all compatible extensions.

From the main administrator page of your site click on System on the sidebar.

Click on the Update Sites link towards the bottom of the middle column on the System page.

Find the Admin Tools Professional for Joomla entry on the list and click on it to open the edit page.

Enter your main or Add-on Download ID in the Download Key area. Click on the Save & Close button on the toolbar to apply the Download ID.

If Joomla! was already showing you that an update for Admin Tools is available prior to entering your Download ID please remember to click on the Find Updates button in Joomla's Update page BEFORE trying to install the update to Admin Tools.

Further steps if a download was available before entering a new Download ID

Joomla applies the Download ID when it *is looking for* updates, not when it tries to download updates. This is a weird implementation detail that dates back to design decisions made before Joomla 1.6 was released, back in 2009. Unfortunately, this means that entering a new Download ID after Joomla shows that updates are available does NOT apply the new Download ID immediately and causes updates to fail.

The solution is simple. Go to System, Update, Extensions and click the Find Updates button in the toolbar BEFORE trying to install the update to Admin Tools.

If this doesn't work, go to System, Maintenance, Clear Cache and click on the Delete All button in the toolbar. Then go back to System, Update, Extensions and click the Find Updates button. This should allow you to install the update to Admin Tools just fine.

Troubleshooting updates to the Professional release

If you still cannot install our software please check that the Download ID is entered correctly. If it's not entered correctly enter the correct Download ID and follow all of these instructions again.

If the Download ID is entered correctly but it's not active in the Add-on Download IDs page you will need to enable it. After enabling it you will be able to download and install the update *without* having to follow these instructions again.

If the Download ID is correct please make sure that you have an *active* qualifying subscription on our site. If your subscription has expired you need to purchase a renewal on our site. Once the renewal is active you will be able to download and install the update *without* having to follow these instructions again, as long as you have not changed your Download ID.

If you still cannot download updates despite having the correct Download ID and an active subscription try waiting for 24 to 48 hours. In very rare cases Joomla's update cache gets stuck despite following the instructions above and you just need to wait until Joomla decides it has to reload it.

If the updates are still not downloading please make sure that you are using a version of Joomla and PHP that is supported by the new version of our software. If you are not sure please consult our Compatibility page [https://www.akeeba.com/compatibility.html].

If you've followed all these troubleshooting steps and the update is not downloading at all you need to contact your host and ask them to allow traffic to www.akeeba.com and cdn.akeeba.com over port TCP 443 (HTTPS), make sure that the PHP cURL module is installed and activated on the version of PHP your site is using and that finally the libcurl and libssl system libraries the cURL module is compiled against are up-to-date versions. If your host cannot help you with any of these requests (despite this being literally what you are paying them to do) you can install updates manually. Kindly note that Akeeba Ltd is not responsible for your hosting environment and that the requirements for downloading updates from our site are met by server software released roughly 5 years ago. If your host cannot provide 5 year old software and open ports in their firewall you should probably be migrating your site to a more up-to-date, competent host.

7. Requesting support and reporting bugs

Support can be provided only to subscribers and only through our site's Support section. If you already have an active subscription which gives you access to the support for Admin Tools you can request support for it through our site. You will need to log in to our site and go to Support, Admin Tools and click on the New Ticket button. If you can't see the button please make sure you have an active subscription that gives you access to Admin Tools support. If you do and still don't see the button please use the Contact Us page to let us know of the ticket system problem and remember to tell us your username.

If you want to report a bug, please use the Contact Us page of our site. You don't need to be a subscriber to report a bug. Please note that unsolicited support requests sent through the Contact Us page will not be addressed. An issue is not a bug unless it can be reliably reproduced *on multiple sites*. Please make sure you include clear instructions on reproducing the issue. If the issue cannot be reproduced it's not a bug report, it's a support request.

Important

Support cannot be provided over Twitter, Facebook, email, Skype, telephone, mail, fax, carrier pigeon, the official Joomla! forum, the Joomla StackOverflow page, our Contact Us page or any other method except the Support section on our site. We also cannot take bug reports over any other medium except the Contact Us page and the Support section on our site. Support is not provided to non-subscribers; if you are using the Core version you can request support from other users in the official Joomla! forum or any other Joomla!-related forum in your country/region. We have to impose those restrictions in support to ensure a high level of service and quality. Thank you for your understanding.

8. Uninstalling Admin Tools

Admin Tools can be uninstalled just like any other Joomla extension.

Warning

Uninstalling Admin Tools will delete your settings and any logged blocked requests. This process is **IRREVERSIBLE**. If you lose your settings by uninstalling Admin Tools we cannot help you retrieve them, they are gone forever.

Uninstalling Admin Tools will **NOT** remove any .htaccess, web.config or nginx.conf you have created with the respective .htaccess Maker, web.config Maker or Nginx Conf Maker feature. It will also not remote any .htaccess and .htpasswd files created with the Password Protect Administrator Directory feature. It will not change the permissions of files and folders you have applied or undo any changes you made to your Temp and Logs folders using Admin Tools. These are things that can be modified externally to Admin Tools after any changes you've applied using Admin Tools itself. Therefore we are not rolling back these changes out of an abundance of caution and to prevent your sites becoming broken.

First, go the extensions manager page. From the sidebar of your Joomla! administrator click on System. On the new page find the Manage area towards the top of the middle column and click the Extensions link.

In the Search box type Admin Tools package. It will show you a single item called "Admin Tools package" whose Type is Package.

Important

Only ever try to uninstall the Package type extension. DO NOT try to uninstall the component, its plugins or module individually. It will leave stuff behind. If you accidentally do that you need to reinstall Admin Tools and then try to uninstall it again.

Select the item's checkbox and click on the Uninstall button in the toolbar. The package and all its included extensions will be automatically uninstalled.

9. Quick Setup

Important

This section applies only to Admin Tools Professional and refers only to its security features

You can quickly apply all of the following settings by using the Quick Setup Wizard page of Admin Tools. A prominent link to that page will appear at the top of your site's administrator section (as a standard Joomla! error message) until you run the wizard or manually configure Admin Tools through the Configure WAF and .htaccess Maker / NginX Conf Maker / web.config Maker pages or import a configuration from the Import Settings page.

If you have already configured Admin Tools you will NOT see the Quick Setup Wizard button any more.

While the Quick Setup documentation section and the Quick Setup Wizard feature will help you to get started with basic protection for your site it is very strongly advisable that you read the documentation in its entirety. It will help you understand the different ways Admin Tools protects your site and the impact each option may have to your site's operation.

Warning

If you have already configured Admin Tools and wish to change its configuration you are NOT supposed to use the Quick Setup Wizard. In fact, this is not supported and will provide no support if you choose to do that. Instead go to Admin Tools, Web Application Firewall, Configure WAF to configure the Joomla! system plugin protection settings or Admin Tools and .htaccess Maker (or Nginx Conf Maker; or web.config Maker depending on your web server) to configure the server-level protection settings.

The fundamental functionality of Admin Tools Professional is to allow you to secure your site. However, setting up your site's security does require some tweaking, as each site is has different structure and needs than the next. When you first install Admin Tools Professional you may feel a bit overwhelmed by the abundance of security options. Well, the good news is that setting it up is not even half as hard as it looks! In this tutorial we will go through the basic security configuration and point you to what you want to do next.

Go to the back-end of your site and click on Components, Admin Tools, Web Application Firewall, Configure WAF and set the following optional settings:

1. Administrator secret URL parameter If you enter "foobar" (without the quotes) in here, then you must access your site's backend as `http://www.example.com/administrator?foobar` i.e. append a questionmark and the secret word. If you skip the ?foobar part, you can't even see the login page. If you do not want to enable this feature please delete its contents and leave this field blank.

   Important notes: This field will contain either your existing Administrator secret URL parameter (if you have already configured one) or a new, random one if there is no Administrator secret URL parameter already set up on your site. Do keep in mind that if you have disabled the Administrator secret URL parameter and you run the Quick Setup Wizard again (NOT RECOMMENDED AND NOT SUPPORTED!) a NEW, COMPLETELY RANDOM value will be shown in this field.

2. Enter your email address in Email this address on successful back-end login and Email this address on failed back-end login. Admin Tools will be sending you an email whenever anyone tries to log in to your site's back-end as a Super Administrator. The minute you receive an email which wasn't triggered by a trusted person, you know you have to get your site off-line a.s.a.p. Do note that this is a very useful feature! It will send you an email even in the unlikely case that someone, for example, hacks your Wi-Fi, steals your login cookie and then uses your own Wi-Fi connection and login cookie to log in to your site.

3. Set Hide/customise generator meta tag to `Yes` and enter something obscure in the Generator tag. I usually jokingly set "Drumlapress" in there, mudding the waters as to which CMS I'm really using. Be creative! This is a low-priority thing to do, but stops "dork scanning" attacks. What I mean is that normally Joomla! spits out its name in the (hidden) generator meta tag on every HTML page on your site. An attacker looks for "dorks" (sites to exploit) by searching for "Joomla! 1.5" on Google. This feature removes that generator tag and you're not susceptible to this kind of attack.

4. Optional but highly recommended, go to http://www.projecthoneypot.org/httpbl_configure.php and open yourself a Project Honeypot account. After your registration, visit that URL again and you'll see something called "HTTP:BL

key". Copy it and paste it into Admin Tools' Project Honeypot HTTP:BL Key field. Also set Enable HTTP:BL filtering to Yes. Why? Project Honeypot analyses data from a vast number of sites and positively identifies IPs currently used by hackers and spammers. This Admin Tools feature integrates with Project Honeypot, examining your visitors' IP addresses. If they are in the black list (known hacker or spammer) they will be blocked from accessing Joomla!.

5. Optional, but highly recommended, enable the IP blocking of repeat offenders. This feature blocks IPs getting repeatedly their requests blocked, i.e. we have strong reasons to suspect they are hackers. Please note that you may not want to enable this feature until you are sure everything is working smoothly, so that you don't accidentally block yourself out of your site. If that does happen, please take a look at https://www.akeeba.com/documentation/troubleshooter/atwafissues.html

If you are using the Apache web server another thing to do is to go to Components, Admin Tools, .htaccess Maker and click on Save and Create .htaccess. If you get a blank page or 500 Internal Server Error on your site, use your FTP client to delete the `.htaccess` file (if it's not visible, just upload an empty text file named `.htaccess`), go back to .htaccess Maker, try disabling some option and repeat the whole process until your site loads correctly. For more information, take a look at https://www.akeeba.com/documentation/troubleshooter/athtaccess500.html

If you are using the NginX web server you should go to to Components, Admin Tools, NginX Configuration Maker and follow the instructions on the page to create a security and performance optimised site configuration file.

If you are using the Microsoft IIS web server you should go to to Components, Admin Tools, web.config Maker and follow the instructions on the page to create a security and performance optimised site configuration (web.config) file.

After applying all of the above protections, it is very likely that some of your site's functionality is no longer working. This is normal. The default settings are very restrictive by design. On each page with a problem, first try applying the step by step process outlined in https://www.akeeba.com/documentation/troubleshooter/athtaccessexceptions.html

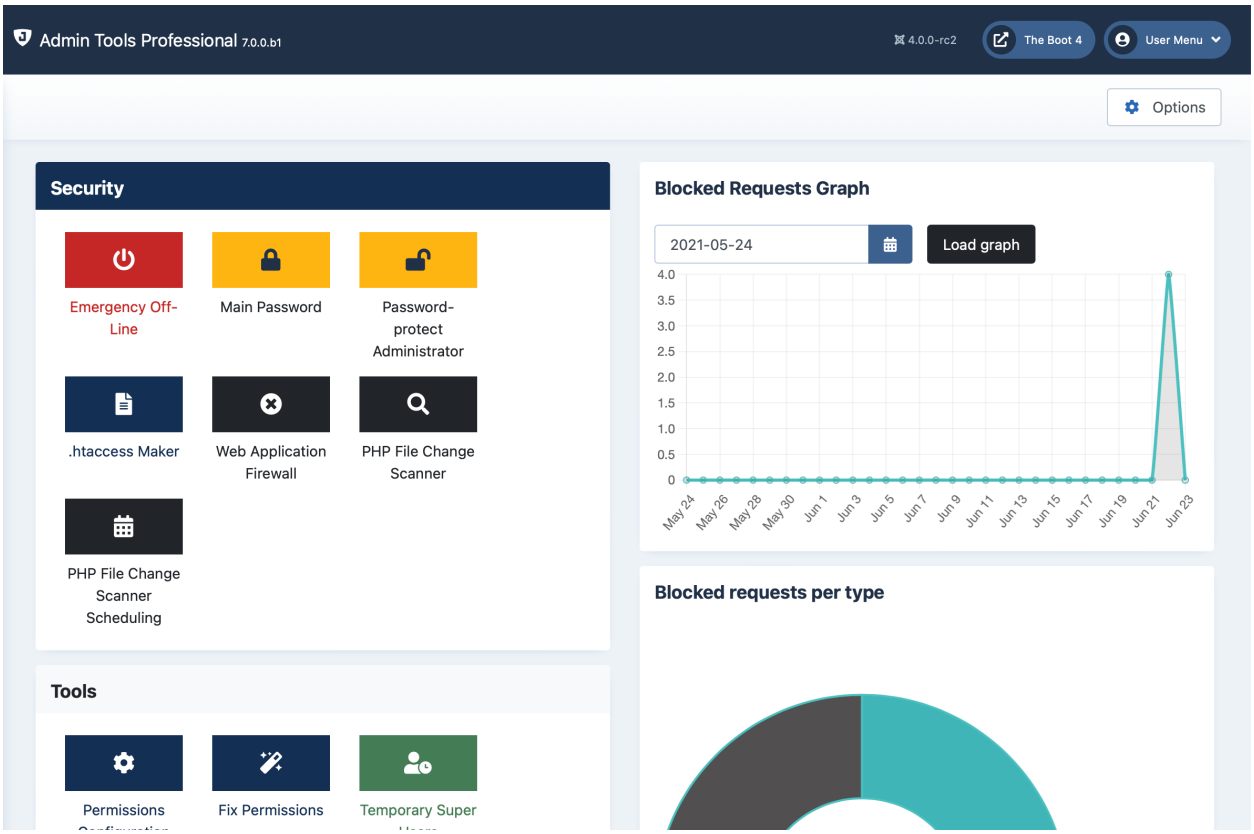
If you get stuck somewhere, feel free to file a support ticket (if you are a subscriber). We are here to help!

Chapter 2. Using Admin Tools

1. The Control Panel

The main page of the component which gives you access to all of its functions is called the Control Panel.

The Control Panel page



In the left hand area you have icons which launch the individual tools out of which Admin Tools is made when clicked. Each of those tools is described in a section of its own in the rest of this documentation.

Clicking on the Scheduling (via plugin) button will launch the System - Admin Tools plugin configuration page in a pop-up dialog box. In there, you can configure the scheduling options for Admin Tools' utilities. Do note that this feature is only available in the Professional edition.

The graphs on the right hand side display the number of blocked requests logged (potential attacks Admin Tools Professional has protected you against), their distributions by type and a few statistics about them, e.g. how many requests were blocked in the last year, month, week, day and so on. Please note that the number of requests blocked **IS NOT MEANT TO BE USED AS A MEASURE OF HOW WELL ADMIN TOOLS PROTECTS YOUR SITE**. The number of requests blocked depends on **EXTERNAL FACTORS**, namely how many attacks were launched against your site in a period of time. Most sites will experience a great variance of this metric over time. It is perfectly normal and very common to see just a handful or no attacks for days or months at a time, then a short but sudden burst of hundreds to thousands of blocked requests over the span of a few hours to a few days. The idea behind the graphs is to make you aware of these spikes which indicate that a malicious showed an interest on attacking your site. The graph showing the types of attacks is a good indication of what they tried to use when probing or attacking your site. That's

all there is to it. These are not Key Performance Indicators (KPIs), they are just a quick glance at the information you could extract by poring over the blocked requests log yourself.

The lower panes display the Admin Tools version information. You can see the version of the software and display the changelog. Finally, there's a reminder that security extensions are not a panacea, they are just one of the many tools in the defender's arsenal.

2. The component Options

You can access the component-wide options of Admin Tools through the Options button in its Control Panel page. Alternatively, you can go to your site's System, Global Configuration menu item and click on Admin Tools on the left hand sidebar.

Please note that this page is rendered and managed by Joomla! itself. We have very minimal control over it, namely on the names and types of the fields. The way that page displays and behaves is entirely controlled by Joomla! and your backend template. If you have observed a display or behavior issue the chances are we cannot help you since we will not (and must not!) modify core Joomla! code. Such bugs should be reported to Joomla! instead.

The page has several tabs, documented below.

Backend

Options which define how the backend of the component works.

Show graphs and statistics	Display graphs and statistics about blocked requests (Professional release only). This is useful visualisation to see the rate at which your site is being probed or attacked. If you feel that your clients may not fully understand that these are not meant to be Key Performance Indicators of the site protection we urge you to disable them using this option.
Automatically reorder the plugin	The System - Admin Tools plugin needs to be ordered as the first published plugin to work correctly. When you visit Admin Tools in the backend the plugin is automatically reordered to be the first one. In some rare cases other plugins need to be published first, for example integrations with third party email services for sending email from your site. In this case set this option to No. If you set this option to No it's up to you to reorder the plugin. If a vulnerable plugin is published before the System - Admin Tools plugin your site *can* be hacked. Admin Tools will be unable to protect you in this case since it will not be running before the vulnerable code, therefore unable to detect the attack. Do not set this option to No unless you are absolutely sure you understand the risks.
Warn about manual edits on server configuration files	When this is enabled Admin Tools will check whether a file generated by .htaccess Maker, Nginx Conf Maker or web.config Maker has been modified outside of Admin Tools whenever you visit Admin Tools' main page in the backend of your site. This is done by comparing the checksum of the file with the one stored in your site's database when the file was generated. If the two checksums are different you will be asked whether you want to regenerate the file or ignore any such changes. The latter option changes this setting, "Warn about manual edits on server configuration files", to No. We strongly recommend NOT changing generated files by hand. Instead, put any custom code in the provided areas for putting custom directives at the top or bottom of the file. In any other cases your manual changes will be overwritten every time you use Admin Tools' .htaccess Maker, Nginx Conf Maker or web.config Maker on your site.
Enable anonymous PHP,	Help us improve our software by anonymously and automatically reporting your PHP, MySQL and Joomla! versions. This information will help us decide which versions of Joomla!, PHP and MySQL to support in future versions.

MySQL and Joomla! version reporting
: Note: we do NOT collect your site name, IP address or any other directly or indirectly unique identifying information. Each site is assigned a randomly generated identifier. At the 7th of each month we generate aggregate information for the previous month and remove the individual data points collected over the last month.

Email sending

Options which control how Admin Tools sends emails for blocked requests. These options only apply in the Professional edition.

Timezone for emails
: All dates and times in the emails sent by Admin Tools to warn you about potential security issues will be expressed in the selected timezone. use the option Server Timezone to let Admin Tools use the Server Timezone setting in your site's System, Global Configuration page.

  Default: GMT

Blocked request email throttling
: When enabled, Admin Tools will only send up to a certain number of emails over a specific of time. This protects your email from getting flooded when your site is under attack. You need to have blocked request logging enabled for all blocking reasons you are sending emails for. Furthermore, the maximum number of log entries you keep — per the system plugin's configuration – must be equal to or higher then the maximum number of emails configured below. In any other case your security exception emails will NOT be throttled.

Blocked request email throttling
: When enabled, Admin Tools will only send up to a certain number of emails over a specific of time. This protects your email from getting flooded when your site is under attack. You need to have blocked request logging enabled for all blocking reasons you are sending emails for. Furthermore, the maximum number of log entries you keep — per the system plugin's configuration – must be equal to or higher then the maximum number of emails configured below. In any other case your security exception emails will NOT be throttled.

Maximum number of blocked requests to send emails for
: The maximum number of blocked requests for which emails may be sent within the period of time defined below. Keep in mind that during a sustained attack more emails than this may be sent depending on how slow your web, database and mail servers respond when your site is under very heavy load. Furthermore, keep in mind that this only affects the blocked requests logged in the database and which with a block reason which is NOT in the configured reasons for which to never send emails.

Period for email throttling
: Email throttling works by checking how many blocked requests have been logged in this many seconds, minutes, hours or days. You select the time unit of measurement below.

Time unit of measurement
: The period above is expressed in the time unit of measurement selected here. Please note that for the purpose of these calculations one minute is 60 seconds, 1 hour is 3600 seconds, 1 day is 86400 seconds. This many be different than wall clock minutes, hours and days on years with leap seconds and on the cusp between Daylight Savings and Standard Time (or vice versa). Timekeeping is a rather convoluted subject.

File Scanner

Configure how the PHP File Change Scanner works. This option only makes sense in the Professional edition which has the PHP File Change Scanner feature.

Enable frontend scheduling
: When enabled it allows you to the PHP File Change Scanner without logging in to the backend. This option is NOT required for using the CLI script.

Secret Word

Required to authorize a remote PHP File Change Scanner execution. Also protects that feature against Denial of Service attacks by requiring you to pass this secret word in the front-end PHP File Change Scanner URL.

Please note that if you use any character other than a-z, A-Z and 0-9 you MUST NOT use the secret word verbatim in the front-end URL. Instead, you have to URL-encode it. The PHP File Change Scanner Scheduling page does that automatically for you. Just go to Components, Admin Tools, click PHP File Change Scanner Scheduling, scroll all the way down and use one of the tabs to get the URL or command line you need to use with the secret word properly encoded in the URL.

For security reasons, you must use a complex enough secret word. Admin Tools enforces that by disabling the front-end scanner feature if you are using a Secret Word with a low complexity. We strongly recommend using a "secret word" consisting of at least 16 random, mixed case alphanumeric characters. It should not be a dictionary word or based off a dictionary word. One good resource for truly random secret words is Random.org's password generator [https://www.random.org/passwords/?num=1&len=24&format=html&rnd=new].

Note

Why is this field not a password field? The Secret word is transmitted in the clear when you load the page and is also visible when you view the source of the page or right click on the field and choose Inspect Element. In other words, as long as someone has access to the component configuration page they can trivially find out the secret word. Not to mention that the secret work is also plainly visible in the PHP File Change Scanner Scheduling page. Always use HTTPS with a commercially signed SSL certificate when configuring or scanning your site.

Send results to this email

When you make a scan from the site's frontend or through the CLI script the scan results will be automatically sent to this email address. If you leave it blank no email will be sent in this case.

Email only on actionable items

When enabled (default) the PHP File Change Scanner will send you an email with the scan results summary *only* when actionable items (added, modified or suspicious files) are detected. If nothing has changed you will get no email. Please remember that being sent an email requires setting up the Send results to this email option above.

Log Level

The detail of the log file kept while scanning your site. Set to Warnings on production sites, Debug when you need to file a support request. The log file is saved in your site's logs folder, as configured in Joomla's Global Configuration.

Minimum Request Time

The minimum amount of time each request to the PHP File Change Scanner will take. Increase this if your server throws an error because requests are coming in too frequent or you otherwise hit CPU / resource limits.

The minimum request time is mostly useful in the case of steps (bursts of PHP File Change Scanner activity) cut short. This can happen, for example, before scanning very big .php files and while listing the contents of directories with more than a hundred files. In these cases the work on the step may be cut off less than 0.1 seconds into the step in some cases. The difference between the time elapse and the minimum request time will be used as idle time, reducing the rate in which requests to the PHP File Change Scanner hit your server. This is useful in preventing AJAX Error messages on servers which apply request limiting (most shared hosting environments).

Recommended values are 2.0 to 7.0. Some high-end servers may be able to use a value of 0.0 which makes scanning faster.

Maximum Work Time

The maximum amount of time consumed scanning your site in each request to the PHP File Change Scanner. The difference between the maximum work time and the minimum request time

is idle time. Therefore setting this value lower than the minimum request time will create an idle period where the PHP File Change Scanner does nothing, therefore reducing CPU / resource usage and spacing out the requests to the server.

Recommended values are 3.0 to 7.0.

Work Time Bias

A value between 50 and 100 which affects how aggressively the PHP File Change Scanner will predict if it's about to hit the Maximum Work Time limit. 50 is most aggressive and will result in scanning taking about half of Maximum Work Time in most requests to the PHP File Change Scanner. 100 is the least aggressive but in this case the PHP File Change Scanner might overshoot the Maximum Work Time.

Recommended value: 75

You can use the combination of the minimum / maximum / bias values to work around AJAX Error messages. Here are some useful combinations:

Min 0.0 / Max 10.0 / Bias 80. Very fast scanning on beefy servers without resource limitations. Scanning is mostly split in 8 to 10 second steps (bursts of activity). There is no waiting time between successive steps. Recommended for dedicated servers.

Min 2.0 / Max 5.0 / Bias 75. The default settings, medium scanning speed. Scanning is split in roughly 3 to 5 seconds steps. Successive steps will be spaced at least 2 seconds apart. Recommended for most users.

Min 7.0 / Max 5.0 / Bias 50. Slow scanning speed. Scanning is split in 2.5 to 5 second steps followed by 2 to 4.5 seconds idle time to reduce CPU and resource usage per steps. Successive steps will be spaced at least 7 seconds apart. Recommended if you get AJAX Error messages every time you try to scan your site.

Min 7.0 / Max 2.0 / Bias 50. Glacial scanning speed. Scanning is split in 1 to 2 second steps followed by 5 to 6 seconds idle time to reduce CPU and resource usage per steps. Successive steps will be spaced at least 7 seconds apart. Only recommended if the 7/5/50 settings still result in AJAX Error messages.

Max. number of Folders per batch

The maximum number of folders to list in a directory at once. If the PHP File Change Scanner detects more than this number of folders it will immediately stop the work, regardless of the Maximum Work Time, and enter into idle mode until the Minimum Request Time is reached. This prevents PHP timing out when listing the contents of massive folders, with hundreds of folders contained directly inside them.

Please note that the time to list the contents of a folder is exponentially proportional to the number of files and folders contained in them -- in computer speak, it's O(N^2). In simple terms, listing the contents of a folder with 1000 contained folders and files will take *100 times* longer than doing so for a folder with 100 contained folders and files. This is a limitation of how Operating Sytems and their filesystem drivers work. It's nothing us, Joomla or PHP itself can do about. You are strongly advised to exclude massive folders and take steps to prevent having folders with thousands of directly contained files and folders. It's best to nest your folders deeply.

Max. number of Files per batch

Similar to the previous setting, but applies to contained files instead of folders.

Excluded folders

Folders to exclude from the scan. One item per line. Wildcard characters (like ? and *) are NOT allowed.

	Give the folder names relative to your site's root folder. For example, enter administrator/components/com_example. Do not enter something like /var/www/mysite/administrator/components/com_example.
Excluded files	PHP files to exclude from the scan. One item per line. Wildcard characters (like ? and *) are NOT allowed. Give the file names relative to your site's root folder. For example, enter administrator/components/com_example/foo.php. Do not enter something like /var/www/mysite/administrator/components/com_example/foo.php.
Extensions to scan	Comma-separated list of file extensions to scan. Do not include the leading dot. Please only enter extensions of text files containing PHP code; any other file types will most likely result in false positives. Default setting: php, phps, phtml, php3, inc
Large file threshold	The PHP File Change Scanner will immediately stop work right before scanning file which are at least this many bytes big. This prevents an accidental PHP timeout when scanning really big files at the tail end of the allotted Maximum Work Time. Recommended value: 525288 (that's 512KB expressed in bytes)
Calculate diffs when scanning	When this option is enabled, Admin Tools will calculate a "diff" for each modified file detected by the PHP File Scanner feature. The "diff" is a compact summary of the differences between the original and the current file. In order for this to be possible, Admin Tools has to keep a copy of each and every .php file on your site inside the database. Be advised that this consumes **a lot** of database space, about 20M for a relatively low to medium complexity site. This option is generally discouraged unless you are trying to figure out why a particular set of files keeps changing all the time.
Do not report files with a zero Threat Score	**STRONGLY NOT RECOMMENDED**. When this option is enabled any new or modified file with a zero threat score will not be reported. We do not recommend turning on this option. It does not make the scan faster, it does not reduce the database storage significantly but it does have an impact on the security threats which will be reported. It is conceivable that a malicious file may have a zero threat score if its payload is written in a very sneaky way which makes it look like a legitimate, if a bit messy and naively coded, file. This kind of underhanded hacks will not be reported when this option is enabled. When this option is disabled they WILL be reported. A human operator may quickly spot a file that shouldn't have changed / be created at all and get rightfully alarmed. Therefore we recommend that you never enable this option. Its only reason of existence is debugging and troubleshooting conducted by the developers of Admin Tools.
Oversize file threshold	Files over this size in bytes will not have their Threat Score evaluated. The will still be reported as New or Changed if applicable, but their threat score will be zero. The idea is that legitimate .php files containing executable code are rarely if ever bigger than one or two Megabytes. Files bigger than that are typically log files with a .php extension and a die statement on top to make them inaccessible over the web. Scanning this kind of non-executable files can result in scan failures or false positives. It's best to report them with a zero threat score instead. Better yet, try to exclude log files with .php extension in the Excluded Files setting above. Recommended value: 5242880 (that 5MB in bytes).

Permissions

This is the standard Joomla! ACL permissions setup tab. Admin Tools fully supports supports Joomla! ACLs.

3. Fixing the permissions of files and directories

File and directory permissions, together with their ownership, control which system process can read and write to them. Having too open permissions such as 0777 is especially problematic on shared hosting as it may result in a compromised third party site being able to write to your site's files, therefore compromising your site as well. Ideally, files should have 0644 permissions whereas folders should have 0755. Files and folders with too open permissions need to be rectified.

In other occasions, we have all run across a misconfigured server which gives newly created files and directories impractical permissions, like 0600. This has the immediate effect that newly uploaded or created files are not accessible from the web. Fixing those permissions is a tedious process, hunting down the files with FTP and changing their permissions manually. Ever so often this becomes so tedious that we are tempted to just give 0777 permissions to everything and get done with it. That's a big mistake.

The solution to those permissions problems is the Fix permissions tool of Admin Tools. It lets you apply the same permissions to all files and folders (by default and recommended: 0644 for files, 0755 for directories). If you have some special files and folders which need different permissions you can set their special permissions individually.

Obviously, this only has effect on Linux, macOS and UNIX-based Operating Systems, i.e. everything except servers running on Windows. The files need to be owned by the same user or group your web server is running under. Please note that file ownership cannot be modified and permissions of files and folders with the wrong ownership can also not be modified since Joomla 4.0 and later no longer include an option to set up and use the FTP layer. You need to have decent hosting, set up by competent people, to use Joomla 4 and later.

Note

You can customize the permissions per folder and file using the Permissions Configuration page.

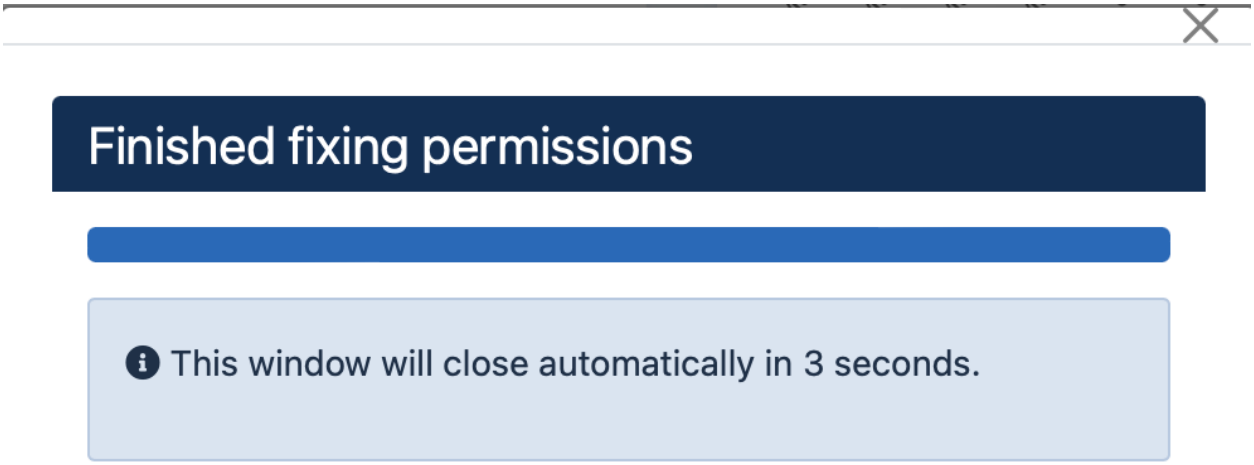
Warning

It is possible that —if you select the wrong kind of permissions in the Permissions Configuration page— you will be locked out of your site and will not be able to access it over FTP or your hosting panel's file manager. If this happens, please contact your host and ask them to fix the permissions of your site.

When you click on the Fix Permissions tool you are going to see the "Fixing Permissions..." pop-up window with a progress bar filling up as Admin Tools is changing the permissions of all your directories and files.

When it's over the progress bar will fill up and the title of the page changes to "Finished fixing permissions":

Finishing fixing permissions



Just click on the Back button to return the the Control Panel page.

No permissions have been changed on my site. Why?

It's a matter of ownership. You are on a host where your files and directories are owned by a different user than the one the web server is running under. In the past, this could be overcome by using Joomla's FTP layer. Joomla 4.0 and later no longer include the FTP layer feature for security reasons.

You will need to ask your host to set up their server to use PHP under FastCGI or FastCGI Process Manager (PHP-FPM), with PHP running as the same user as your site's owner user. This is a standard way to configure PHP and is, in fact, the recommended way to run PHP since 2010 since it's also the *most secure* way to run PHP. If you find yourself using a host which declines to do that it's a good idea looking for a better host.

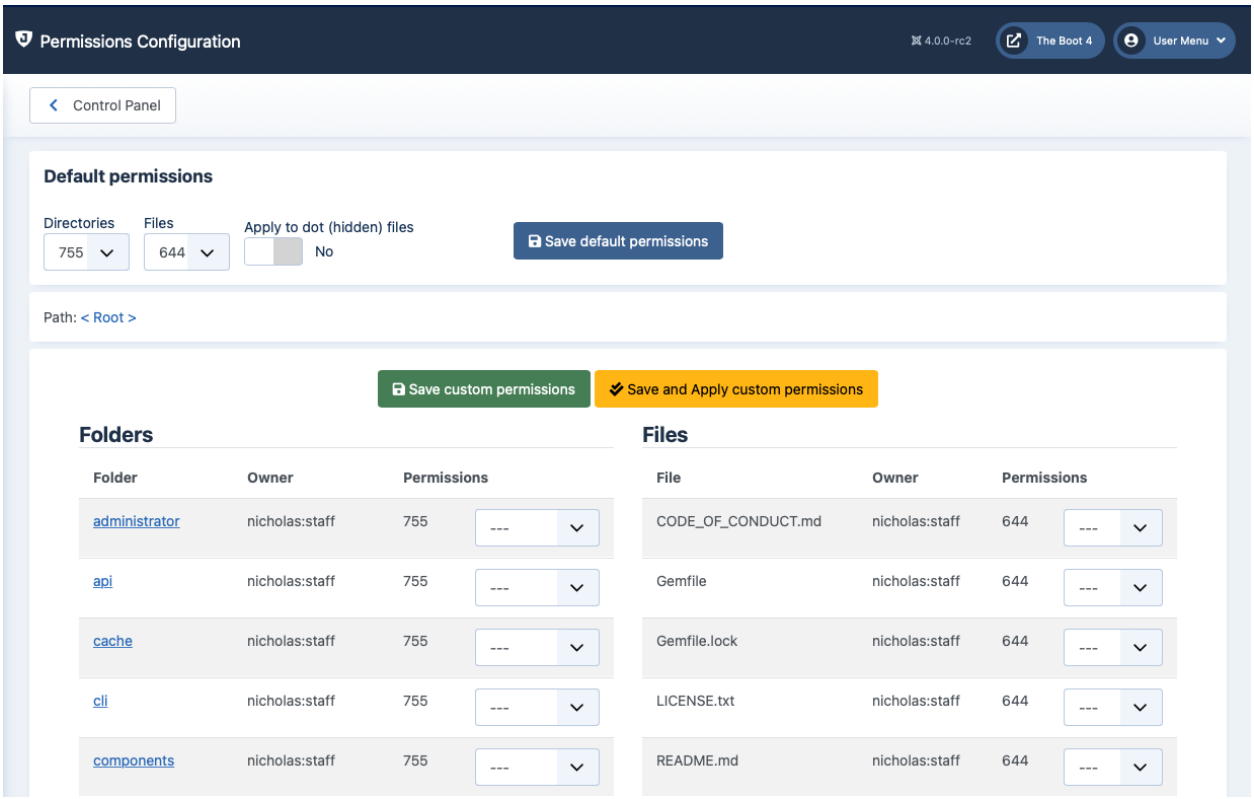
3.1. Configuring the permissions of files and directories

By default, Admin Tools is configured to apply 0755 permissions to all of your directories and 0644 permissions to all of your files. However, this isn't always desirable. Sometimes you want to make configuration files read-only (0400 or

similar permissions) or give a directory wide-open (0777) permissions as a temporary workaround for some extensions if you're using a misconfigured host. For example, Akeeba Backup needs to append to its log and backup archives. If your host is misconfigured you may have to use 0777 permissions to Akeeba Backup's output directory. Since that directory is not web accessible — it's either outside the site's root or has a .htaccess file to prevent direct access to its contents — this is one of the few cases where 0777 permissions may be used, more or less safely.

You can configure the default permissions and per-directory and per-file permissions using the Permissions Configuration button in the component's control panel.

Configuring the permissions



When you launch this feature you see a page split in three sections.

The top section, titled Default permissions, allows you to configure the permissions which will be applied if nothing different is configured. Use the drop-down lists to select the default permissions for directories and files (the default setting is 755 and 644 respectively), then use the Save default permissions button to apply the setting.

The option Apply to dot (hidden) files controls whether the default permissions will be applied to files and directories whose name starts with a dot also known as “dot-files”. On Linux and other UNIX-compatible Operating Systems dot-files are hidden from directory listings by default. Hosts use such files and folders to store hosting-specific information, e.g. which FTP users have access to the site. Typically, these files and folders should NOT have their permissions altered, therefore it's generally recommended to leave this option turned off.

The middle section (“breadcrumbs”) shows the path to the currently selected directory and allows you to quickly navigate through the folders by clicking on their names.

The bottom section is split in two panes, Folders and Files. Each pane lists the folders and files inside the current directory. Clicking on the name of a folder will navigate inside that folder. There are three columns next to each folder.

The first displays the current owner (user:group format). The second displays the current permissions of that directory in the file system. The final column contains is a drop down list. The default setting, represented by dashes, means that there is no specific preference for this folder/file and the default permissions will be applied to it. If you select a customized permissions setting remember to click the Save custom permissions button before navigating to another folder or returning to the control page, otherwise your settings will be lost.

Important

None of these customized permission settings are applied immediately. You will need to launch the Fix Permissions feature for them to be applied. Click on the Back button to return to the Control Panel page where you can find this button.

Alternatively, you can click on the Save and Apply Permissions button to immediately save and apply all custom permissions you see on this page. If you don't see the permission changing, please take a look at the previous section for more information on why this might have happened and what you need to do.

4. Emergency Off-Line Mode

Important

This feature uses .htaccess files which are only compatible with Apache, Litespeed and a very few other web servers. Some servers (such as NginX and IIS) are incompatible with .htaccess files. If we detect a known to be incompatible server type **this feature will not be shown at all** in Admin Tools' interface. It should be noted that even if you do see it in the interface it doesn't necessarily means that it will work on your server. This depends on your server's capabilities. If you are unsure or believe it doesn't work please consult your host.

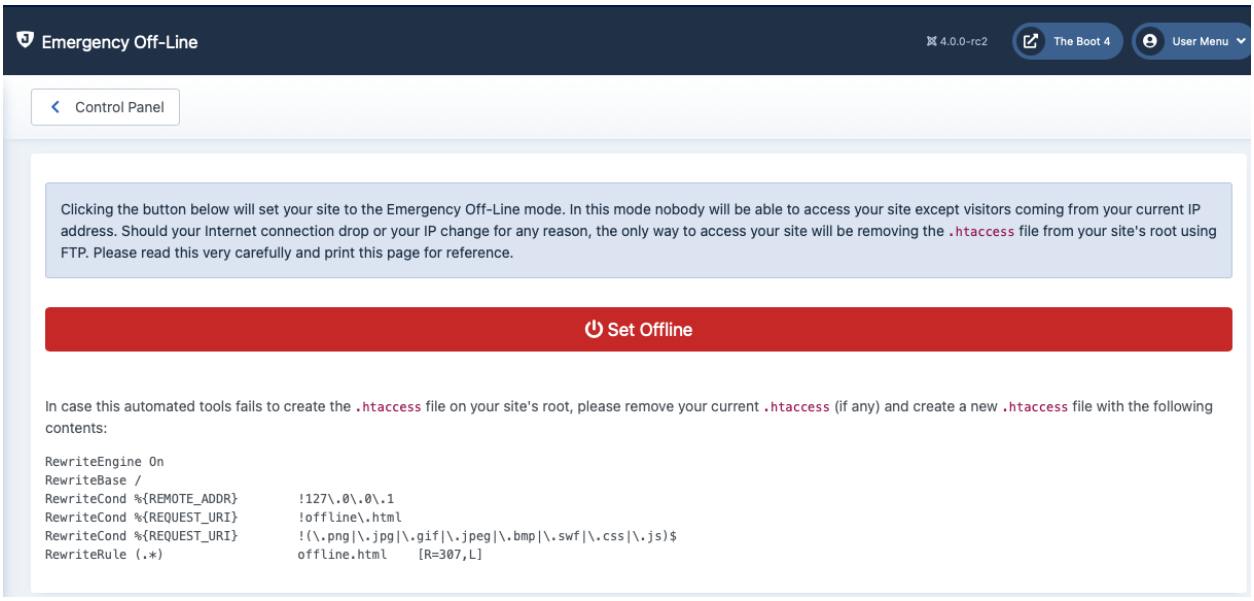
Joomla!'s off-line feature, the one you can enable in your site's Global Configuration, has a major deficiency. It doesn't *actually* put the site off-line. All it does is to replace the HTML output with the "off-line" page... after running all plugins, modules and the component which would display on the page. This can have serious security implications, especially when you need to take your site off-line to deal with a security issue (e.g. an extension known to be vulnerable or a hacked site) or to update a key component of your site.

The Emergency Off-Line Mode of Admin Tools enables you to *really* and *securely* take your site off-line. More specifically, the Emergency Off-Line Mode does the following actions:

- It creates —if it doesn't already exist— a static HTML page named offline.html in your site's root. This page contains the offline message to show to visitors. Feel free to modify it to your liking.
- It creates a backup copy of your site's `.htaccess` file, if there was one, under the name `.htaccess.eom`.
- Finally, it creates a `.htaccess` file which will temporarily redirect all access attempts to the `offline.html` page. It will allow only your current IP address to have access to the site.

To put your site in Emergency Off-Line Mode, simply click on the Emergency Off-Line button in Admin Tools' Control Panel page. This will get you to the following page:

The Emergency Off-Line Mode page



Clicking the Set Offline button will attempt to perform the steps outlined above. Should any of those steps fail, for example due to insufficient file permissions, you can still put your site in Emergency Off-Line Mode by taking out the following procedure:

1. Keep a copy of your site's `.htaccess` file, e.g. renaming it to `htaccess.bak`.
2. Create a new .htaccess file in your site's root with its contents being what displayed in the last part of the Emergency Off-Line Mode page.

If your Internet IP address changes before you disable the Emergency Off-Line Mode —i.e. your connection drops or you switch to another computer which connects to the Internet through a different Internet router— you will be unable to log in to your site. In this case, follow these steps:

1. Using an FTP application of your liking remove the .htaccess file, or upload a blank .htaccess file overwriting the old one.
2. Go to your site's administrator back-end and relaunch Admin Tools' Emergency Off-Line mode. Clicking on the Set Offline button will create a new `.htaccess` file with your current IP address. Your backup `.htaccess.eom` file will not be overwritten.

If you want to set your site back on-line, just visit the Emergency Off-Line page and click on the Set Online button. This will replace the off-line `.htaccess` file with the contents of the `.htaccess.eom` backup file and remove the backup file. If this doesn't work, follow this manual procedure:

1. Using an FTP application of your liking remove the .htaccess file, or upload a blank .htaccess file overwriting the old one.
2. Rename the `.htaccess.eom` backup file back to `.htaccess`

Will I be able to use FTP or my host's control panel file management when I enable this feature?

Of course! This feature only prevents web (HTTP/HTTPS) access to your Joomla site from IP addresses other than yours. It can't and won't touch FTP access or your hosting control panel's file management.

But I can still access my site after using this?

That's the point. You can access the site but people coming from other IP addresses cannot.

If you need to test this use a different device with a mobile Internet connection, e.g. your phone disconnected from WiFi and connected to mobile data. This will have a different IP address than your current device.

Other people can still access the site or I cannot access the site right after enabling this feature

This means that your site is behind a proxy such as a CDN, third party Web Application Firewall service, load balancer or caching proxy. In these cases the visitor's address appear to be the same for all traffic coming to your site. In this case you cannot use this feature. It's a server limitation.

Note

In theory, we could change the .htaccess file we generate to use the HTTP X-Forwarded-For header. However, you'd need to know if you are hosted on a server under the configuration described above and tell us in advance. In most cases this happens when you are using a third party CDN (such as CloudFlare) or third party Web Application Firewall service (such as Sucuri). It's easier to go into the control panel of these third party services and block traffic from all IPs except yours than remembering to configure the Emergency Off-Line Mode every time you need to use it.

Should I always use the emergency off-line mode instead of Joomla!'s off-line feature?

No. There are many cases where using Joomla!'s off-line feature is more convenient, i.e. when you want to simply make your site's content unavailable to random web visitors and search engines while building a new site. The only cases when you should use the Emergency Off-Line Mode are:

- If you believe that your site has been compromised (hacked). The Emergency Off-Line will make it impossible for the hacker to access your site while you are working to restore it.
- When updating key components of your site and don't want to risk a user following a direct link which might interfere with the process. This use case is largely irrelevant nowadays since databases will automatically lock the tables they are making structural changes to when an extension update is in progress, making it very unlikely if not impossible that you'll ever see a problem like that.

In all other cases it's more convenient and sufficient to go to your site's Global Configuration and enable the off-line feature of Joomla! itself.

The offline.html page Admin Tools creates is horrid. Can I change it?

Well, you're not wrong. It's a bland, unbranded, boring page. Of course you can change it. Simply upload an offline.html of your liking to your site's root. You can link to JPG, GIF, PNG, BMP, SWF, CSS and JS files —on the same or a different server— from inside the HTML of this file. Do not try to link to other file types, it will not work.

Won't the redirection to offline.html mess with my SEO?

No. The redirection to `offline.html` is made using the 307 HTTP status code which tells search engines that this redirection is temporary, they should not index the page now, but come back later when the problem will have been restored.

Help! I have been locked out of my site! Fix it!

Delete the .htaccess file from your site's root. Rename the file .htaccess.eom back to .htaccess and that's about it.

Help! As soon as I clicked on "Put Offline" I got a white page or Internal Server Error 500 page.

Don't panic! You have an old version of Apache —1.3 or 2.0— which doesn't support one feature used in the `.htaccess` file generated by Admin Tools. You can easily work around this issue by editing the `.htaccess` file in your site's root, using an FTP application. Replace `[R=307,L]` in the last line with `[R,L]` (that is, remove the =307 part) and save back the file. That's all.

My Internet connection drops all of the time. Will I get continuously locked out of my site if I use this feature?

It depends. If you have a static IP address, no, you will never get locked out. If you have a dynamic IP address, I don't know. When I used to have a dynamic IP address I observed that my IP address wouldn't change if my connection dropped for less than 1-2 minutes. It all depends on how your ISP assigns IP addresses to its clients. The only way to find out is the hard way: trial and error.

5. Protect your administrator back-end with a password

Important

This feature uses .htaccess files which are only compatible with Apache, Litespeed and a very few other web servers. Some servers (such as NginX and IIS) are incompatible with .htaccess files. If we detect a known to be incompatible server type this feature will not be shown at all in Admin Tools' interface. It should be noted that even if you do see it in the interface it doesn't necessarily means that it will work on your server. This depends on your server's capabilities. If you are unsure or believe it doesn't work please consult your host.

The Password-protect Administrator tool of Admin Tools is designed to add an extra level of protection to your site's administrator back-end, asking for a username and password before accessing the administrator login page or any other file inside the `administrator` directory of your site. It does so by using Apache .htaccess and .htpasswd files, so it won't work on hosting which uses IIS or NginX.

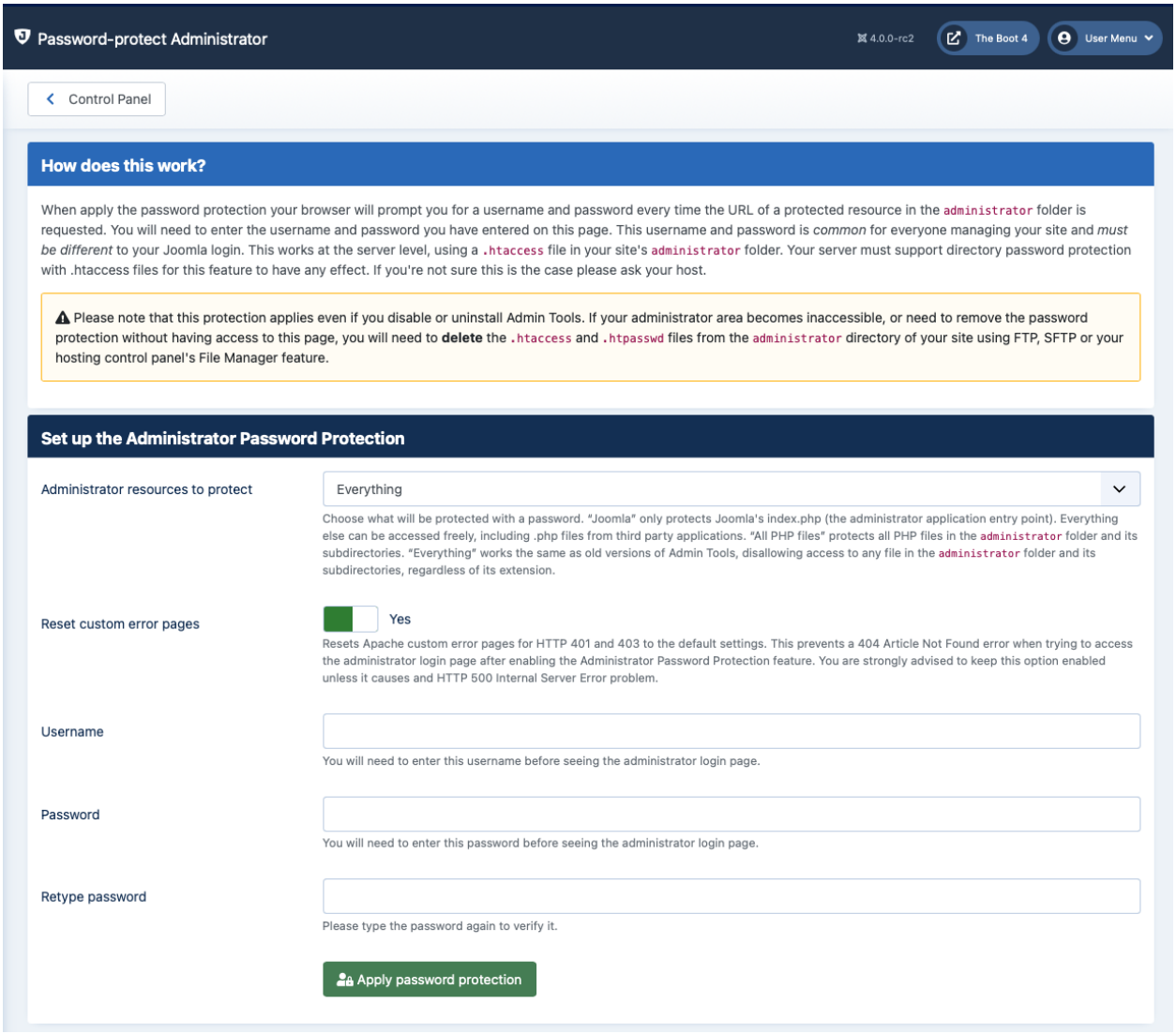
Important

Some prepackaged server bundles and some live hosts do not allow using .htaccess files to password-protect a directory. If it is a local server, edit your `httpd.conf` file and modify every AllowOverride line to read:

```
AllowOverride All
```

If you are on a live host, please consult your host about the possibility of them allowing you to use this feature on your site.

Password-protect Administrator



Warning

There are several password hashing schemes supported by different versions of Safari. It's possible that if you password protect your administrator directory on one server and then transfer your site on a different server you will receive a blank page or an Internal Server 500 error page when accessing your site's administrator backend. This is normal and expected. All you have to do is to remove the `.htaccess` and `.htpasswd` files from your administrator directory after restoring the site. Then you can re-apply the administrator protection from within Admin Tools.

To apply the password protection, enter a desired username and password and click on the Password-protect button. After a few seconds your browser will ask you to supply the username and password you just specified. This will also happen each and every time anybody tries to access the administrator back-end of your site. In other words, you have to share the username and password with all back-end users of your site.

If you wish to remove the password protection you can either remove both the `.htaccess` and `.htpasswd` files from your administrator directory, or click on the Remove Password Protection button.

There are two more options on this page you should be aware of.

Administrator resources to protect. In the past, the administrator password protection was an all-or-nothing feature. This is no longer the case. This option lets you choose which resources under the administrator directory will be protected with a password. “Joomla” only protects Joomla's index.php (the administrator application entry point). Everything else can be accessed freely, including .php files from third party applications. “All PHP files” protects all PHP files in the administrator folder and its subdirectories. “Everything” works the same as old versions of Admin Tools, disallowing access to any file in the administrator folder and its subdirectories, regardless of its extension.

We recommend using “Everything”. That's the default option and equivalent to how things worked in the past.

If you see the password prompt come up in the front-end of your site it means that an extension you are using is trying to load static media such as CSS and JavaScript from a folder located under your site's administrator folder. This is a bug in the extension which should be fixed. In the meantime, you can select the “All PHP files” option, thereby allowing access to the static media resources. This is a bit less secure, in the sense that it makes it easier for attackers to identify which version of Joomla and its extensions you are using by directly accessing their static media files and translation files. While not enough to compromise your site directly, it gives the attacker some insight into your site they could exploit for a future attack. We strongly recommend using our .htaccess Maker and its Backend Protection feature to mitigate this security concern.

In very rare cases, typically third party payment plugins for e-commerce applications, you may need to allow access to arbitrarily named .php files hosted in a directory under your site's administrator folder. This is NOT recommended; using Joomla's com_ajax is the best way for developers to do that. If, however, you do bump into this case you can select the “Joomla” option. This is the least secure option and you may also need to add an exception in the .htaccess Maker page if you are using that feature as well.

Reset custom error pages. This will resets Apache custom error pages for HTTP 401 and 403 to the most minimal built-in error page in Apache. This prevents a 404 Article Not Found error when trying to access the administrator login page after enabling the Administrator Password Protection feature. You are strongly advised to keep this option enabled unless it causes and HTTP 500 Internal Server Error problem.

6. The .htaccess maker

Note

This feature is only available in the Professional release

Warning

This feature is only available on servers running the Apache web server. If your server is using IIS or NginX the button to launch this feature will not be shown. If you are using Lighttpd, Litespeed or any other server software you will see a button to launch this feature but this feature may not have any effect. If unsure please consult with your host about their server's support of .htaccess files.

One of the most important aspects of managing a web site hosted on an Apache server is being able to fine-tune your .htaccess file. This file is responsible for many web server level tweaks, such as enabling the use of search engine friendly (SEF) URLs, blocking access to system files which should not be accessible from the web, redirecting between pages based on custom criteria and even optimising the performance of your site. On the downside, learning how to tweak all those settings is akin to learning a foreign language. The .htaccess Maker feature in Admin Tools helps you create such a file with a user-friendly interface.

Important

Some prepackaged server bundles and some live hosts do not allow using .htaccess files to override server settings. If it is a local server, edit your `httpd.conf` file and modify every AllowOverride line to read:

```
AllowOverride All
```

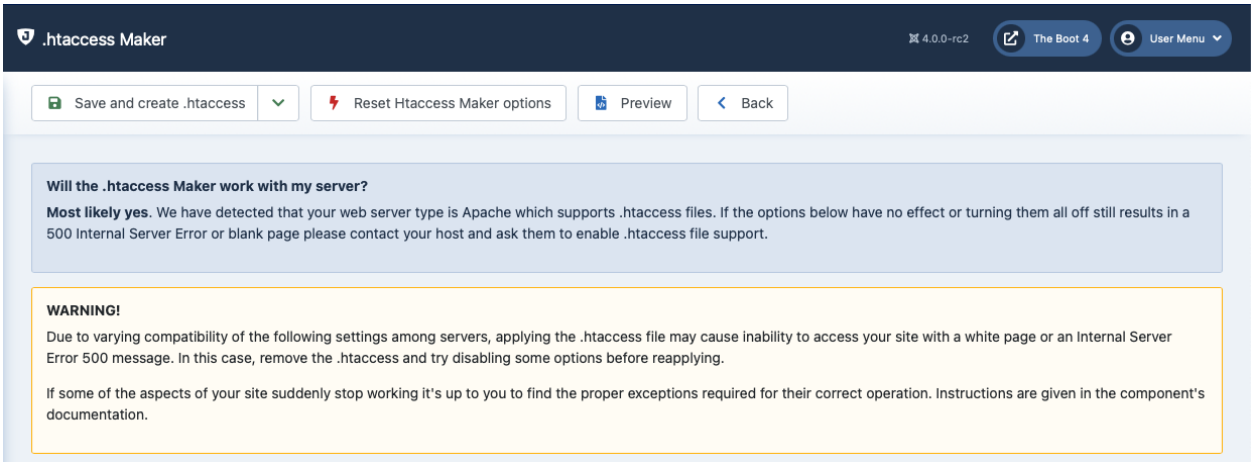
If you are on a live host, please consult your host about the possibility of them allowing you to use this feature on your site.

Tip

If you ever want to revert to a "safe default", just set all of the options on this page to "Off" and click on "Save and create .htaccess". This will create a very basic `.htaccess` file which is essentially the same as the one shipped with Joomla! (`htaccess.txt`) without any of the optional sections.

The top part of the .htaccess maker page contains the standard toolbar buttons you'd expect:

The .htaccess Maker's toolbar



- Save and create .htaccess saves the changes you have made in this page's options and creates the new `.htaccess` file. If you already had a `.htaccess` file on your site, it will be renamed to `.htaccess.admintools` before the new file is written to disk.
- Save without creating .htaccess (visible after clicking the dropdown arrow next to the previous button) saves the changes you have made in this page's options without creating a new `.htaccess` file. This should be used when you have not decided on some options yet, or if you want to preview the generated `.htaccess` file before writing it to disk.
- Reset Htaccess Maker options will reset all options on the page to the default settings you'd see when first installing Admin Tools. Please note that this is NOT the same as turning off every option! The default settings have several features turned on. Use this button only when you feel you've messed up so bad you don't even know where to begin fixing things.
- Preview pops up a dialog where you can see how the generated `.htaccess` file will look like without writing it to disk. This dialog shows the saved configuration. If you have modified any settings they will not be reflected in there until you click either of the save buttons.
- The Back button takes you back to the Control Panel page.

Below the toolbar there are five panes with different options, described below. Before you do that, please read and understand the following warning. Support requests which indicate that you have not read it will be replied with a link back to this page.

Please bear in mind that depending on your web server settings, some of these options may be incompatible with your site. In this case you will get a blank page or an Internal Server Error 500 error page when trying to access any part of your site. If this happens, you have to remove the `.htaccess` file from your site's root directory using an FTP application or the File Manager feature of your hosting control panel. Your old `.htaccess` file is saved as `.htaccess.admintools`. You can rename that file back to `.htaccess` to revert to the last known good state. If you are unsure how this works, please consult your host before trying to create a new `.htaccess` file using this tool.

Some prepackaged server environments, like WAMPserver, do not enable Apache's mod_rewrite module by default, which will always result in an Internal Server Error upon applying the .htaccess file. In this case you are strongly suggested to enable it. On WAMPserver you can click on its tray icon, go to Apache, Modules and make sure rewrite_module is checked. On other server environments you have to edit your httpd.conf file and make sure that the LoadModule mod_rewrite line is not commented out (there is no hash sign in front of it). Once you do either of these changes, you must restart your server for the change to become effective.

If this is the first time you are using the .htaccess Maker we recommend that you begin by setting all options to No and then enable them one by one, creating a new .htaccess file after you have enabled each one of them. If you bump into a blank or error page you will know that the last option you tried is incompatible with your host. In that case, remove the .htaccess file, set the option to No and continue with the next one. Unfortunately, there is no other way than trial and error to deduce which options may be incompatible with your server.

Other important things you can add to your .htaccess

Some things cannot be added as features to the .htaccess Maker because the interface would become truly unwieldy. However, there are tools which can generate rather compact .htaccess rules which you can add to .htaccess Maker, in the Custom .htaccess rules at the top of the file section. Here we'd like to point you to some of them.

Content security policy (CSP)

It mitigates the risk of cross-site scripting and other content-injection attacks. Joomla 4 includes a component which can do that for you. The downside is that the component's options only apply to the pages generated by Joomla 4 itself.

Alternatively, you can read more about it on the dedicated site for this feature [http://content-security-policy.com/]. There is a simple tool [http://cspisawesome.com/] which allows you to generate the required .htaccess code for the CSP feature according to your preferences. Keep in mind that when you restrict the scripts' origin you should keep in mind that several extensions (including many templates) will load their scripts off a third party CDN which must be explicitly allowed or your site will no longer work!

Custom error documents

Most hosting control panels allow you to specify custom HTML pages for common server error pages. The most important ones are for errors 403 (Access Forbidden), 404 (Not Found) and 500 (Internal Server Error). It's always a good idea showing a nicely designed page instead of the default, text-only, ugly page of Apache for these error messages!

6.1. Basic Security

Basic security

Disable directory listings (recommended)
: When disabled, your web server might list the files and subdirectories of any directory on your site if there is no index.html file inside it. This can pose a security risk, so you should always enable this option to avoid this from happening.

Protect against common file injection attacks
: Many attackers try to exploit vulnerable extensions on your site by tricking them into including malicious code hosted on the attacker's server. Enabling this option will protect your server against this kind of attacks. This works by preventing any URL which references an http:// or https:// URL in the query string. Sometimes these are legitimate requests. For example, some gallery components use them. In this case you are recommended to use the RFIShield (Remote File Inclusion protection) in the Web Application Firewall and turn this .htaccess Maker option OFF.

Disable PHP Easter Eggs
: PHP has a fun and annoying feature known as "Easter Eggs". By passing a special URL parameter, PHP will display a picture instead of the actual page requested. Whereas this is considered fun, it is also widely exploited by attackers to figure out the version of your PHP installation (these images change between different versions of PHP) and launch hacking attacks targeting your specific PHP version. By enabling this option you completely disable access to those Easter Eggs and make it even more difficult for attackers to figure out the details of your server.

  Note: You are advised to also set `expose_php` to `Off` in your `php.ini` file to prevent accidental leaks of your PHP version.

Block access to configuration.php-dist and htaccess.txt
: These two files are left behind after any Joomla! installation or upgrade and can be directly accessed from the web. They are used by attackers to tell the Joomla! version you are using, so that they can tailor an attack targeting your specific Joomla! version. Enabling this option will "hide" those files when accessed from the web (a 404 Not Found page is returned), tricking attackers into believing that these files do not exist and making it slightly more difficult for them to deduce information about your site. This option also hides the web.config.txt file included in Joomla! 3 and later for use with the IIS server.

Protect against clickjacking

Turning on this option will protect you against clickjacking [http://en.wikipedia.org/wiki/Clickjacking]. It does so by preventing your site's pages to be loaded in a, Frame, IFrame or Object tag unless this comes from a page inside your own site. Please note that if your site relies on its pages being accessible through frames / iframes displayed on other sites (NOT on your site displaying content from other sites, that's irrelevant!) then you should not enable this option. If unsure, enable it.

Reduce MIME type security risks

Internet Explorer 9 and later, as well as Google Chrome, will try by default to guess the content type of downloaded documents regardless of what the MIME header sent by the server. Let's say a malicious user to upload an executable file, e.g. a .EXE file or a Chrome Extension, under an innocent file extension as .jpg (image file). When a victim tries downloading this file, IE and Chrome will try to guess the file type, identify it as an executable file and under certain circumstances executing it. This means that your site could be unwittingly used to serve malware. Such an event could result in your site being added to a list of known bad sites by browser makers and cause their browsers to display a warning to users when visiting your site. By enabling this feature you instruct IE and Chrome to respect the file type sent by your server, eliminating this issue. See the relevant MSDN article [https://msdn.microsoft.com/en-us/library/gg622941(v=vs.85).aspx] for more information.

Reflected XSS prevention

When enabled the browser will be instructed to prevent reflected XSS attacks. Reflected XSS attacks occur when the victim is manipulated into visiting a specially crafted URL which contains Javascript code in it. This URL leads to a vulnerable page which outputs this Javascript code verbatim in the page output ("reflects" the malicious code sent in the URL).

This is a commonly used method used by attackers to compromise web sites, especially when a zero-day XSS vulnerability is discovered in popular Joomla! extensions or Joomla! itself. The attacker will try to trick the administrators of websites into visiting a maliciously crafted link. If the victims are logged in to their site at that time the malicious Javascript will execute, typically giving the attacker privileged information or opening a back door to compromising the site.

Enabling this option in .htaccess Maker will instruct the browser to try preventing this issue. Please note that this only works on compatible browsers (IE8; Chrome; Safari and other WebKit browsers) and only applies to reflected XSS attacks. Stored XSS attacks, where the malicious Javscript is stored in the database, is **NOT** prevented. You should consider this protection a safety belt. Not wearing a safety belt in the event of an accident pretty much guarantees serious injury or death. Wearing a safety belt minimises the possibility of injury or death but does not always prevent it. This option is your safety belt against the most common type of XSS attacks. You should use it but don't expect it to stop everything thrown your way. Always keep your software up-to-date, especially when a security release is published!

For more information please consult the relevant MSDN article [http://blogs.msdn.com/b/ie/archive/2008/07/02/ie8-security-part-iv-the-xss-filter.aspx].

Neutralise SVG script execution

Send a custom Content Security Policy HTTP header for SVG files which prevents scripts inside them from executing. Doing so will also disable most SVG animations and remove all interactive features from all SVG files.

This option only needs to be enabled if your site is configured in such a way that it allows untrusted users to upload unsanitized SVG files to your site. **By default, Joomla does NOT permit this**. You'd have to configure it to do so yourself, using the Media Manager's options page and / or a third party extension.

Note that unlike the Site Protection features, this will apply to all SVG files regardless of their location.

Remove web server and PHP version signature

By default Apache and PHP will output HTTP headers advertising their existence and their version numbers. If you are always using the latest and greatest versions this may not be a problem, but the chances are that your host is using an older version of both software. Giving away the version numbers of the server software in every request makes it trivial for an attacker to obtain information about your site which will help them to launch a tailored attack, targeting known security issues in the versions of Apache and PHP you're using. Enabling this option will mitigate this issue. Please note that this is SECURITY THROUGH OBSCURITY which is NEVER, EVER an adequate means of protection. It's just a speed bump in the way of an attacker, not a roadblock.

You are strongly advised to keep your server software up-to-date. If you're not managing your own server, e.g. you're using a shared host, we very strongly recommend choosing a hosting service which follows this rule. As a simple test, if your server is not currently using one of the PHP versions published in the top right corner of http://php.net (or at most one version earlier, i.e. the third number of the version on your server is one less than the one listed on php.net) the chances are that your server is using outdated, vulnerable server software. Remember that outdated versions of PHP and Apache, even with *some* security patches backported, CAN NOT be secure. There's a good reason new software versions are published regularly.

Prevent content transformation

Enabling this feature instructs proxy servers and caches to not convert your content. For example, certain proxy servers (typically found in mobile networks, businesses and ISPs in congested areas) will attempt to scale and aggressively compress images, CSS and Javascript to save bandwidth. This can lead to several issues, from displayed images being a bit off to your site breaking down because the compressed CSS/JS introduced errors preventing the browser from parsing it correctly. With this feature enabled the cache and proxy servers will be instructed to not do that by setting an HTTP header. If they respect the HTTP header (they should, it's a web standard) such issues are prevented.

For more information please consult the formal web standard document RFC 2616, section 14.9.5 [https://tools.ietf.org/html/rfc2616#section-14.9.5]

Block access from specific user agents

When enabled, it will block any site access attempt if the remote program sends one of the user agent strings in the User agents to block option. This feature is designed to protect your site against common bandwidth-hogging download bots and otherwise legitimate tools which are more usually used for hacking sites than their benign intended functionality.

User agents to block

The user agent strings to block from accessing your site. You don't have to enter the whole UA string, just a part of it. The default setting includes several usual suspects.

You can type new entries by clicking at the end of the list, type the entry and press ENTER to accept it. Delete items using the X button next to each entry.

Do note that some server with mod_security or mod_evasive installed will throw an "Access forbidden" message if you try to save the configuration settings when this field contains the word "WGet". If you come across this issue it is not a bug with Admin Tools or Joomla!, it is a server-level protection feature kicking in. Just avoid including the word Wget and you should be out of harm's way.

Default list of user agents to block

The following is the default list of user agents to block. It is very thorough and seems to be reducing the number of attacks enormously. If you are upgrading from an earlier version you might want to try it out.

```
WebBandit
webbandit
Acunetix
```

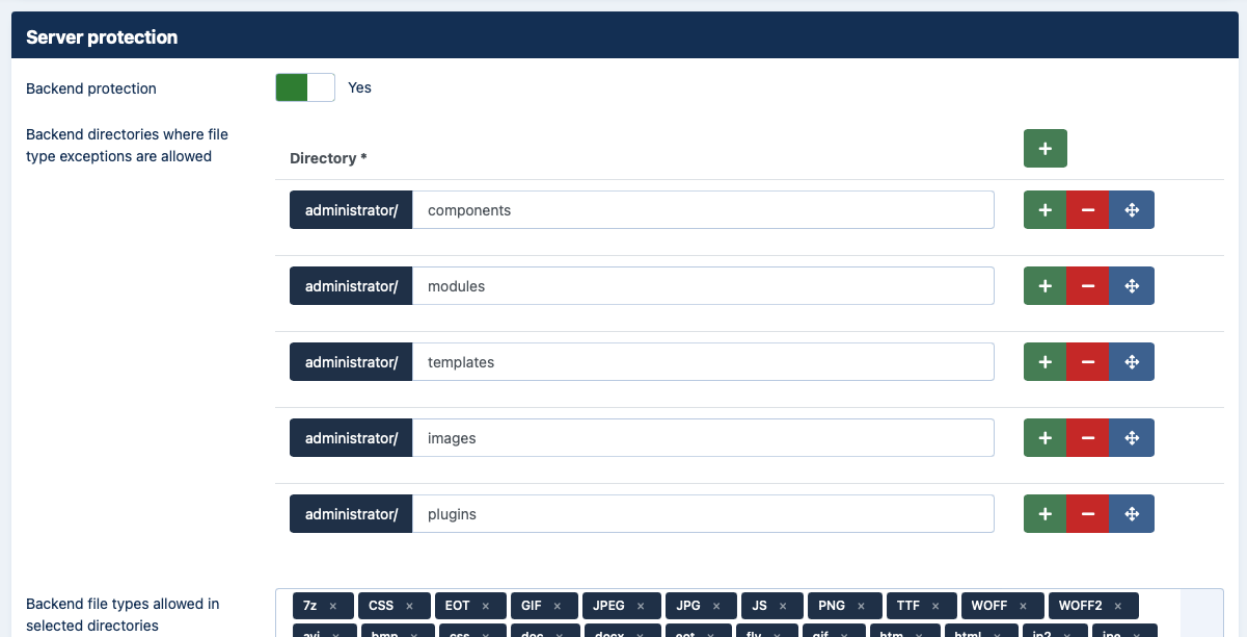
```
binlar
BlackWidow
Bolt 0
Bot mailto:craftbot@yahoo.com
BOT for JCE
casper
checkprivacy
ChinaClaw
clshttp
cmsworldmap
comodo
Custo
Default Browser 0
diavol
DIIbot
DISCo
dotbot
Download Demon
eCatch
EirGrabber
EmailCollector
EmailSiphon
EmailWolf
Express WebPictures
extract
ExtractorPro
EyeNetIE
feedfinder
FHscan
FlashGet
flicky
GetRight
GetWeb!
Go-Ahead-Got-It
Go!Zilla
grab
GrabNet
Grafula
harvest
HMView
ia_archiver
Image Stripper
Image Sucker
InterGET
Internet Ninja
InternetSeer.com
jakarta
Java
JetCar
JOC Web Spider
kmccrew
larbin
LeechFTP
libwww
```

```
Mass Downloader
Maxthon$
microsoft.url
MIDown tool
miner
Mister PiX
NEWT
MSFrontPage
Navroad
NearSite
Net Vampire
NetAnts
NetSpider
NetZIP
nutch
Octopus
Offline Explorer
Offline Navigator
PageGrabber
Papa Foto
pavuk
pcBrowser
PeoplePal
planetwork
psbot
purebot
pycurl
RealDownload
ReGet
Rippers 0
SeaMonkey$
sitecheck.internetseer.com
SiteSnagger
skygrid
SmartDownload
sucker
SuperBot
SuperHTTP
Surfbot
tAkeOut
Teleport Pro
Toata dragostea mea pentru diavola
turnit
vikspider
VoidEYE
Web Image Collector
Web Sucker
WebAuto
WebCopier
WebFetch
WebGo IS
WebLeacher
WebReaper
WebSauger
```

```
Website eXtractor
Website Quester
WebStripper
WebWhacker
WebZIP
Wget
Widow
WWW-Mechanize
WWWOFFLE
Xaldon WebSpider
Yandex
Zeus
zmeu
CazoodleBot
discobot
ecxi
GT::WWW
heritrix
HTTP::Lite
HTTrack
ia_archiver
id-search
id-search.org
IDBot
Indy Library
IRLbot
ISC Systems iRc Search 2.1
LinksManager.com_bot
linkwalker
lwp-trivial
MFC_Tear_Sample
Microsoft URL Control
Missigua Locator
panscient.com
PECL::HTTP
PHPCrawl
PleaseCrawl
SBIder
Snoopy
Steeler
URI::Fetch
urllib
Web Sucker
webalta
WebCollage
Wells Search II
WEP Search
zermelo
ZyBorg
Indy Library
libwww-perl
Go!Zilla
TurnitinBot
sqlmap
```

6.2. Server protection

Server protection (partial screenshot)



This feature is based on the principle of ‘nothing runs on my site unless I explicitly allow it’ a.k.a. ‘deny-first’. This is a great policy which puts you in total control of your site, greatly reducing your attack surface area.

By blocking access to front-end and back-end elements (media files, Javascript, CSS and PHP files) it makes it extremely hard —but not outright impossible— for an attacker to hack your site, even if he manages to exploit a security vulnerability to upload malicious PHP code to your site. Additionally, it will deny direct access to resources not designed to be directly accessible from the web, such as translation INI files, which are usually used by attackers to find out which version of Joomla and its extensions you are running on your site to tailor an attack to your site.

On the downside, you have to explicitly enable access to some extensions' PHP files which are designed to be called directly from the web and not through Joomla!'s main file, `index.php`.

Do note that enabling this feature will kill the functionality of some extensions which create arbitrarily named PHP files throughout your site. In our humble opinion the security risk of having your site unprotected greatly outweighs the benefits of such extensions. As a result, we strongly suggest disabling these extensions.

There are three sections of configuration settings controlling the functionality of the Server Protection feature. In short, you have controls for protecting the backend of your site (everything under the administrator directory), the frontend of the site (everything NOT under the administrator directory) and exceptions to these rules.

Starting with the backend section we see the following options:

Back-end protection	Disables direct access to most back-end resources, except those in the exceptions lists. It is generally recommended to turn it on to enhance the protection of your site.
Back-end directories where file type	This is a list of back-end directories (that is, subdirectories of your site's administrator directory) where you expect media files to be present. Place one directory on each line. Subdirectories of those directories are automatically added to the exceptions list without having to explicitly list them here. You can add more lines using the + buttons. You can remove a line using the - button.

exceptions are allowed

You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You must not type the administrator/ prefix. As you can see, it's already added for you and can't be removed. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

Back-end file types allowed in selected directories

The extensions of back-end files which allowed to pass through the server protection filter, as long as the files with those extensions are in the list above. Do not type the leading dot for each file extension. Add file extensions by clicking at the end of the list, typing the extension and pressing ENTER. Delete file extensions by pressing the X next to them. Extensions are case–insensitive as of 7.0.6; this means that entering pdf will also match the extensions PDF and Pdf. The convention is to type in the extensions in lowercase. Regardless of the case–insensitivity of Admin Tools, it is a good idea to have the *extensions* of the files you upload in lowercase to avoid issues with third party extensions, Joomla itself and software running on case–sensitive–aware Operating Systems such as Linux.

Disable client-side risky behavior in backend static content

Certain static media types, such as HTML and SVG, may contain client-side scripts in JavaScript. It would be possible for an attacker to use a legitimate site feature or a vulnerability on your site to upload such an HTML or SVG file to one of the “Back-end directories where file type exceptions are allowed” folders or otherwise trick a Super User to do that. Then, they could exploit a well-meaning, legitimate feature of your site or otherwise trick a Super User into opening that file on their browser while they are logged into your site as a Super User. The client-side script could therefore “steal” the Super User's cookie, send it to the attacker who can now impersonate the Super User on the site.

When you enable this option, the allowed static media types in these directories will have a Content-Security-Policy header forcibly applied to them which tells the browser to not let them load any external script or execute any inline script or scriptable attribute, thereby neutering client-side script execution.

If you have a few select files which need client-side scripting, e.g. forms, animation demos etc, we recommend that you allow them explicitly in the Exceptions section described further below this documentation. If you can't enumerate all of these files you can disable this option but bear in mind that this reduces the security of your site.

Next up, we have the front-end section:

Front-end protection

Disables direct access to most front-end resources, except those in the exceptions lists. It is generally recommended to turn it on to enhance the protection of your site.

Enabling this feature will prevent web access to all folders in your site's root, not just Joomla's folders (such as components). If you need to enable direct access to a folder you will need to place it in one of the *front-end* directory exception lists in the Fine-tuning or Exceptions section.

Front-end directories where file type exceptions are allowed

This is a list of front-end directories (that is, directories in your site's root) where you expect media files to be present. Place one directory on each line. Subdirectories of those directories are automatically added to the exceptions list without having to explicitly list them here. You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You must not type the administrator/ prefix. As you can see, it's already added for you and can't be removed. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

Use this to allow access to specific types static media files inside specific directories. This is the least permissive exception to front-end blocking. Use this for folders which have a mix of public and private content, as long as the private content is NOT of an allowed file type (see below).

Front-end file types allowed in selected directories

The extensions of front-end files which allowed to pass through the server protection filter, as long as the files with those extensions are in the list above. The same controls and rules as “Back-end file types allowed in selected directories” apply.

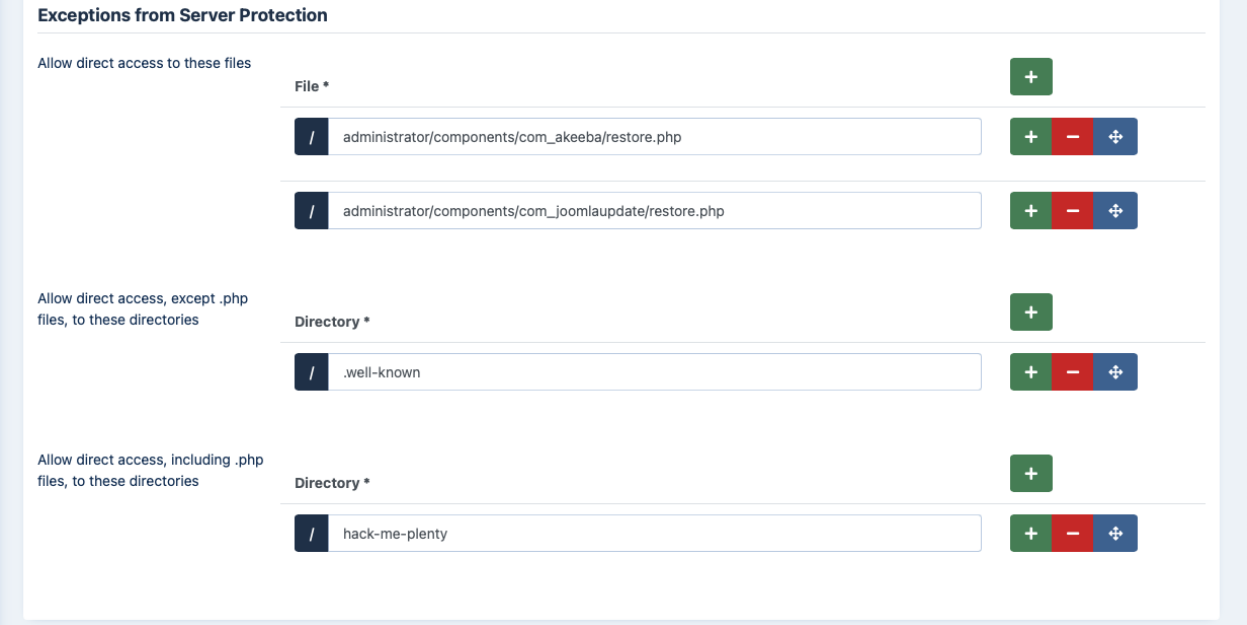
Disable client-side risky behavior in frontend static content

Certain static media types, such as HTML and SVG, may contain client-side scripts in JavaScript. It would be possible for an attacker to use a legitimate site feature or a vulnerability on your site to upload such an HTML or SVG file to one of the “Front-end directories where file type exceptions are allowed” folders or otherwise trick a Super User to do that. Then, they could exploit a well-meaning, legitimate feature of your site or otherwise trick a Super User into opening that file on their browser while they are logged into your site as a Super User. The client-side script could therefore “steal” the Super User's cookie, send it to the attacker who can now impersonate the Super User on the site.

When you enable this option, the allowed static media types in these directories will have a Content-Security-Policy header forcibly applied to them which tells the browser to not let them load any external script or execute any inline script or scriptable attribute, thereby neutering client-side script execution.

If you have a few select files which need client-side scripting, e.g. forms, animation demos etc, we recommend that you allow them explicitly in the Exceptions section described further below this documentation. If you can't enumerate all of these files you can disable this option but bear in mind that this reduces the security of your site.

Exceptions



Finally, we have the Exceptions section. This allows specific files or all files in specific directories to pass through the Server Protection filter without further questions. This may be required for several reasons.

For starters, some extensions need to directly access PHP files, without passing them through Joomla!'s main files. One such example is Akeeba Backup Professional's `restore.php` used in the integrated restoration feature, as it would be impossible to use the index.php of a site which is in a state of flux while the restoration is underway.

Other examples are CSS and Javascript minifiers, either included in your template or installed in your site. Forum extensions are also part of the same problem, as they tend to create a dedicated directory for their attachments, avatar

icons and so forth. Moreover, some extensions place PHP files inside your site's `tmp` and `cache` directories and expect them to be directly accessible from the web. While this is a frowned upon behaviour, contrary to the design goals of Joomla! itself, you still need a way to work around them and we have to provide it. Finally, you may have a third party script which doesn't install as a Joomla! extension. The Server Protection feature would normally block access to it and you still need a way around this limitation. So here we have those workarounds:

Allow direct access to these files

Place one file per line which should be exempt from filtering, therefore accessible directly from the web. The default settings include Akeeba Backup Professional and, of course, Admin Tools itself.

Please remember that you are entering the **file path** relative to your site's root, not a URL. If you want to allow the URL `http://www.example.com/mysite/components/com_example/foobar.php?test=1&whatever=2` and your site is hosted at `http://www.example.com/mysite` you need to enter `components/com_example/foobar.php` here. Here's how we figured this out. Start by removing the question mark from the URL and everything that's to its right. Then, remove the site's root URL from the left part of the remaining URL. Finally, remove the leading forward slash — as you can see, it's already included for you and you can't remove it.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. Please note that the path separator is the forward slash (/), even on Windows.

Allow direct access, except .php files, to these directories

Direct access to all files (except for .php files) will be granted if they are inside any of the directories in this list AND their subdirectories. Normally you should only need to add your forum's attachments, avatars and image galleries directories, or other directories where you only intend to store media files. As with all similar options, add one directory per line, without a leading or trailing slash.

This is a middle ground in front-end blocking. You should use this only for folders which have only public content, i.e. if it's in that folder you are OK with it being shared with the rest of the world.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

Allow direct access, including .php files, to these directories

This option should be used sparingly as possible. Each and every directory placed in this list is no longer protected by Server Protection AT ALL and can be potentially used as an entry point to hacking your site. To be clear, if an attacker uploads a malicious file in one of these directories by exploiting a vulnerability which allows them to upload predictably named files in predictably named folders they will be able to access it over the web. This is how sites get hacked. As far as we know there are only three cases when its use is even marginally justifiable:

- If you have installed another Joomla!, WordPress, or any other PHP application in a subdirectory of your site. For example, if you are trying to restore a copy of your site inside a directory named `test` in your site's root you have to add `test` to this list. This is the one and only usage scenario which doesn't compromise your site's security.
- Some templates and template frameworks may wrap their CSS and Javascript inside PHP files in order to deliver them compressed to your browser. While this is a valid technique, it's possible that the list of PHP files is too big to track down and include in the first list of the Exceptions section. In this case you may consider putting the template subdirectory containing those files in this list.

- Some extensions do something silly: they place files inside your site's `tmp` or `cache` directories and expect them to be directly accessible from the web. This is plain wrong because these directories are designed to be protected system directories where direct access should not be allowed, most notably because they might contain sensitive information. However, if you have such extensions you need a way to allow direct access to those directories.

  If you decide that convenience is better than security we can't stop you. Add tmp and cache to this list and wish for the best. You are opening a security hole on your site and you do it at your own risk and potential peril.

It's best to use the Allow direct access to these files feature if possible, allowing access only to very specific .php files.

Remember that an attacker who has found an upload vulnerability on your site can upload a malicious script inside one of these folders and use it to hack you. These folders are totally unprotected. That's why we very strongly advise against using this feature unless it's absolutely necessary - keeping in mind that you are, at the same time, leaving a hole in your security defences.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You do not need to type a leading or trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

In order to figure out which custom exceptions you need to add on your site, take a look at the How to determine which exceptions are required section.

Warning

Windows users beware! *Do not* use Windows' path separator (the backslash - \) to separate directories! We are talking about directories as they appear in URLs, so you should always use the URL path separator (forward slash - /) in those settings. In other words `some/long/path` is correct, `some\long\path` is WRONG.

6.2.1. How to determine which exceptions are required

After applying the Server Protection settings you may notice that some aspects of your site no longer work properly or at all. This could be something obviously throwing an error; files being inaccessible with a 403 or 404 error message; or something more subtle, as if CSS and JavaScript no longer load. These are probably caused by the Server Protection settings disallowing access to files. We can find which files need to be accessed and add exceptions to them to restore the functionality of your site.

Tip

There is no valid reason for software integrated with Joomla! to require such exceptions for .php files anymore. Since early 2013 Joomla! has shipped with com_ajax, a built-in method to access dynamic content without needing direct access to arbitrarily named .php files. Developers who have not caught up to this technology after so many years are less likely to follow security best practices. Moreover, most of these directly accessible .php files do not load Joomla!, therefore they do not load Admin Tools, meaning that you are no longer protected by Admin Tools' Web Application Firewall if malicious requests are being sent to those files. As a result, adding extensions for their software's .php files to be accessible directly from the web can compromise your site's security.

Exceptions for non-.php files – such as CSS, JavaScript, images, fonts etc – may still be required and are generally not a security issue. Some static content can be a security issue if it's accessible over the web (e.g.

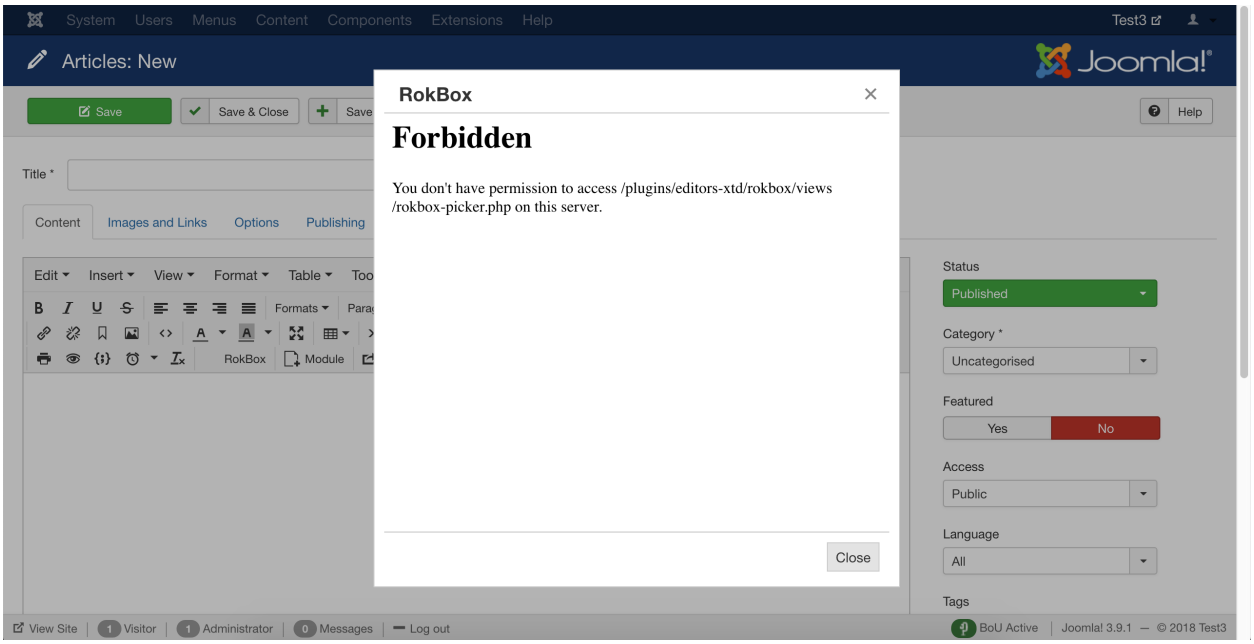
JSON files containing privileged information such as usernames, passwords and API keys) but these cases are rare and you shouldn't be overly worried about them.

The process of determining which exceptions are required is made relatively easy by modern browsers. All modern browsers include "developer tools" which give us insight on what is going on when the browser tries to load your page. They even highlight the errors for us, making our work much easier.

In the following example we are going to be using Mozilla Firefox. The process is very similar on Google Chrome, Opera, Safari and Microsoft Edge. If you are not sure how to open the developer tools for your browsers do a quick search on the Internet similar to *`developer tools <your browser name here>`*.

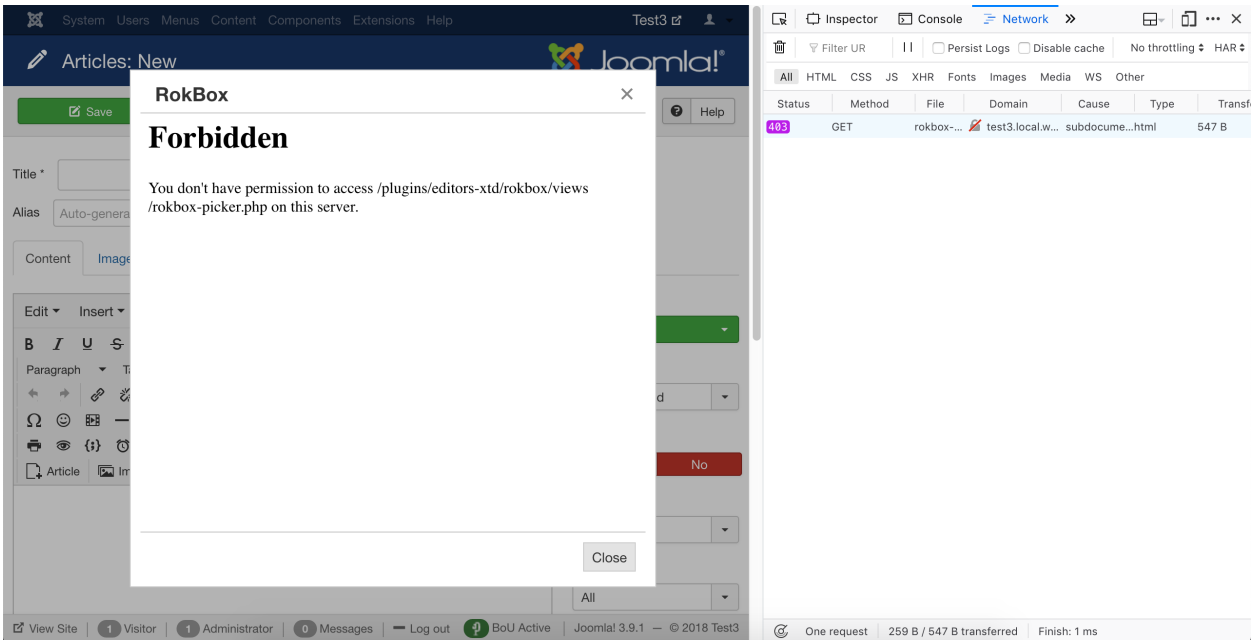
Our example makes use of RokBox, an extension by RocketTheme, which causes a problem when used through the Joomla! article editor in the backend of the site. The instructions also apply to the frontend of your site and any other extension which might be causing a problem.

After applying the Server Protection settings in the .htaccess Maker we get the following error when we click on the RokBox button in the editor:



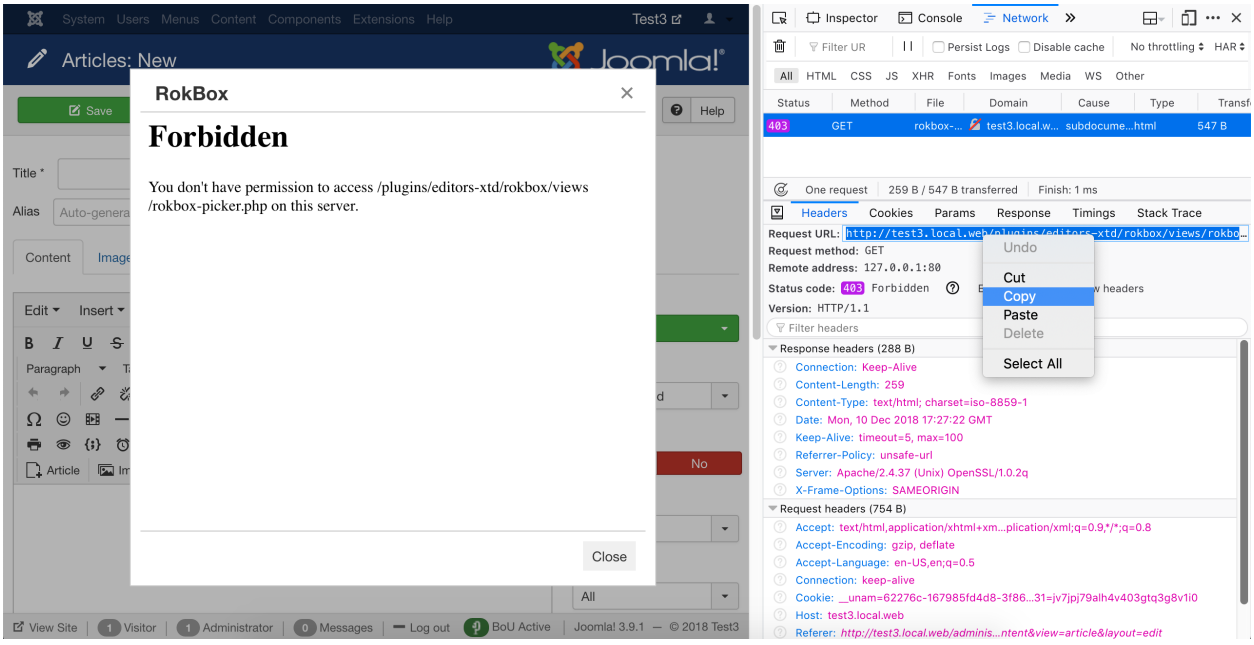
This is a vague error message. We want it to be that way to not give away any information about our site to bad guys. At the same time it makes our life a bit harder. Click on Close to dismiss that non-functional dialog.

Click on Firefox' hamburger menu (the three horizontal lines button towards the top right of its window), Web Developer, Toggle Tools. This opens a side pane. On that pane there's a top menu. Click on the Network option. You may have to click on the >> arrows first to see it. Then click on the RokBox button on your editor. You now see something interesting happen in the Web Developer pane:

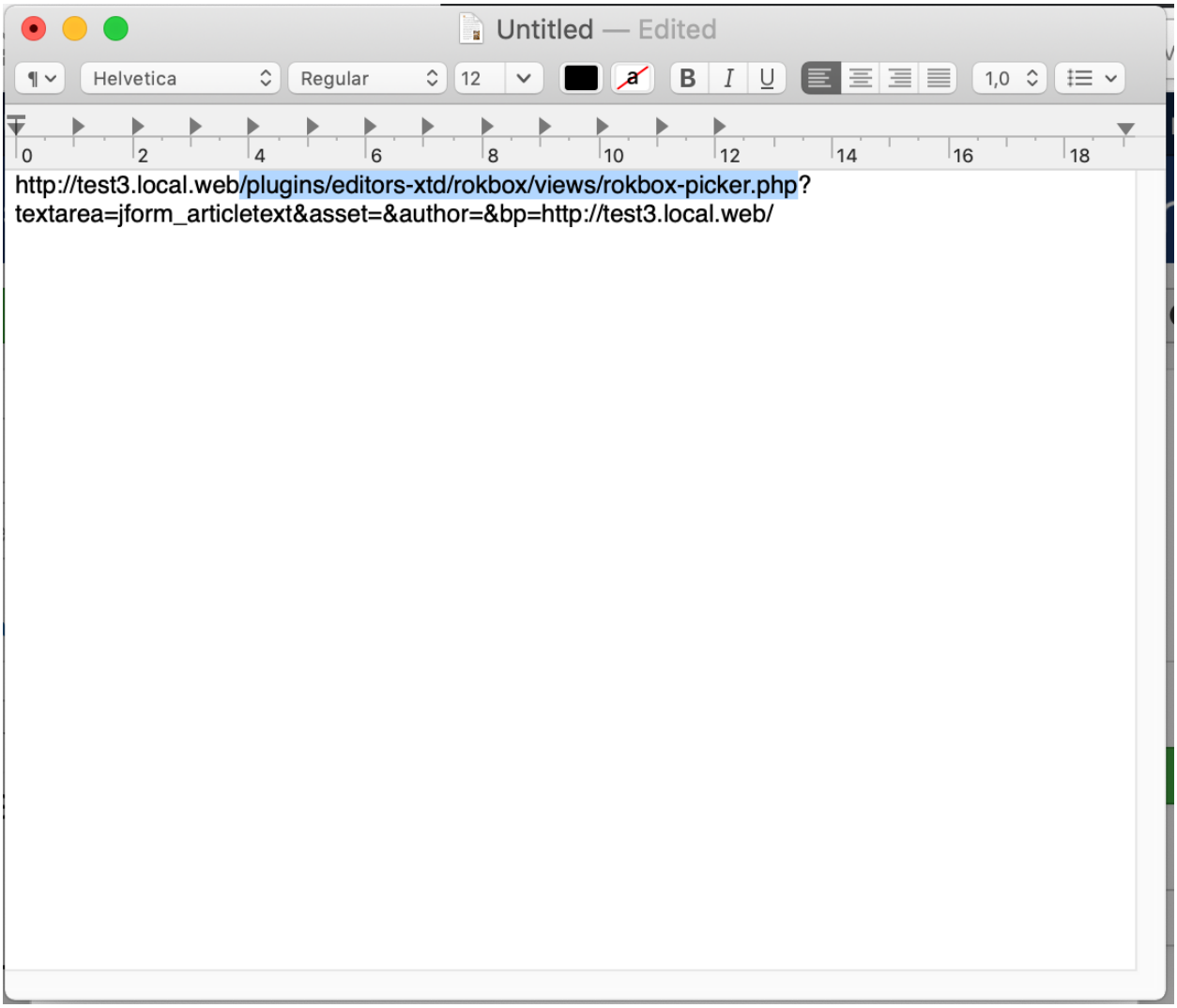


The pane shows the request made to your server and its error status 403 highlighted. 403 means access forbidden, 404 means not found. The former is an error code we definitely expect as the result of applying Server Protection. The latter can either mean that the file is genuinely not there or that Server Protection is preventing access to it. If you get a 404 always check if the file exists first. Since we have a 403 here we know it's a Server Protection issue.

Click on the line with the error code. You will see some details open below the list. Click on the Headers tab on top of those details. You see a lot of information but what is interesting to us is the Request URL. It tells us which URL the browser tried to access and failed to do so. However, it's truncated and doesn't help us any. So right click on it and choose Copy.



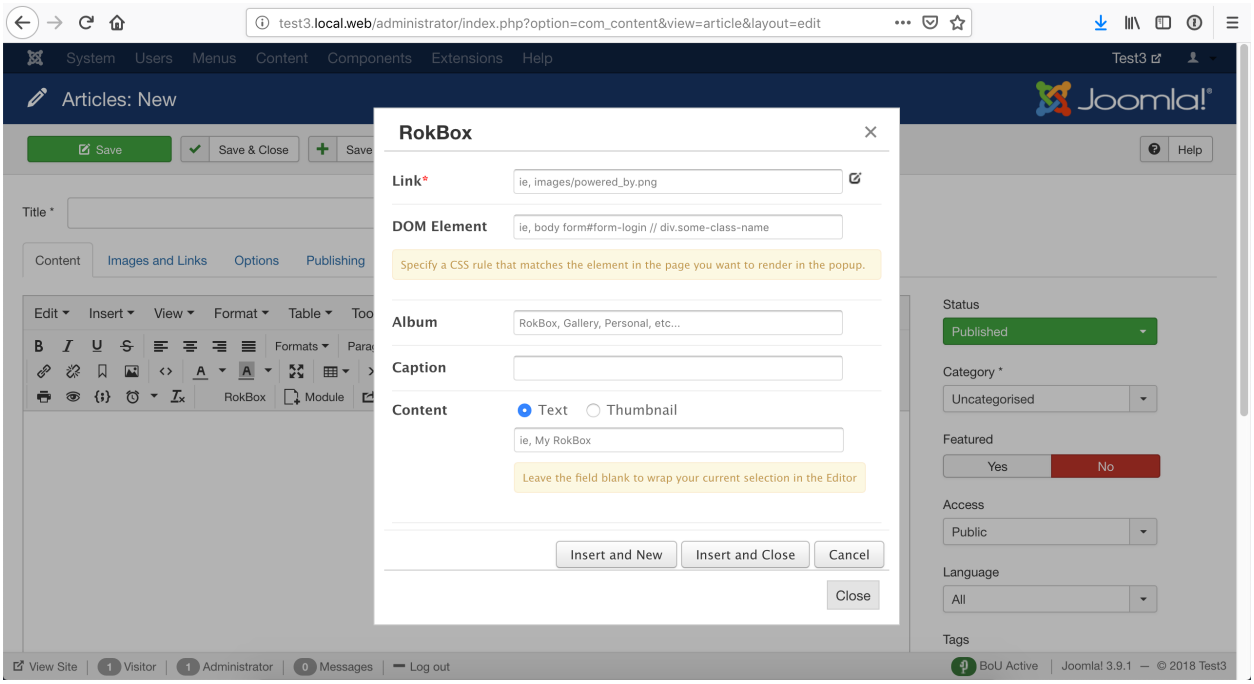
Now open a plain text editor application such as Notepad on Windows, TextEdit on macOS, gEdit or Kate on Linux and paste in the URL you copied.



Highlight the stuff between your site's root URL and the question mark (if there is no question mark, highlight to the end of the line). In our example the site's URL is http://test3.local.web and the highlighted portion is `plugins/editors-xtd/rokbox/views/rokbox-picker.php` which, as you may have guessed, is the relative path to the file blocked by Server Protection. Copy this.

Now go to Components, Admin Tools, .htaccess Maker and find the Allow direct access to these files box.

In a new line paste the relative file path you had highlighted previously. Make sure you do not include the leading slash or the trailing question mark. Click on Save and Create .htaccess in the toolbar to apply your changes. Now the extension works:



In case you see plenty of files or files with random and changing names; or you see files in the cache, tmp and logs folders

Sometimes the above method will show a long list of files; or files with random names; or files whose names change on every page or request. Typically, you see that they are all located in the same few folders. There are two different things you can do.

If the files you see do not have a .php extension the the easy way is to add the path to the folder to the Allow direct access, except .php files, to these directories list. For example, if all files are in the `foobar/assets/static` folder you need to add `foobar/assets/static` to the Allow direct access, except .php files, to these directories list.

The drawback to that is that *all* files without a .php extension in this folder and its subfolders will be accessible over the web. This might be a security risk if the same folder contains files with privileged information. You can mitigate that risk by adding an exception in a harder, but more secure, way. You'd need to add the folder's path to the Backend directories where file type exceptions are allowed or Frontend directories where file type exceptions are allowed lists in the .htaccess Maker. If the folder's relative path starts with `administrator/` add it to the first list (backend) after removing the `administrator/` prefix.

For example, if the files are in the `administrator/components/com_example/media` folder you need to add `components/com_example/media` to the Backend directories where file type exceptions are allowed list. Conversely, if the files are in the `foobar/assets` folder you need to add `foobar/assets` to the Frontend directories where file type exceptions are allowed list.

Please note that in this case (hard way) if the file extension is not in the Backend file types allowed in selected directories or Frontend file types allowed in selected directories lists you will need to add the file extension, without the dot, in those lists as well. Keep in mind that capitalization matters. For example, the extensions png, PNG and Png are different and have to be listed separately.

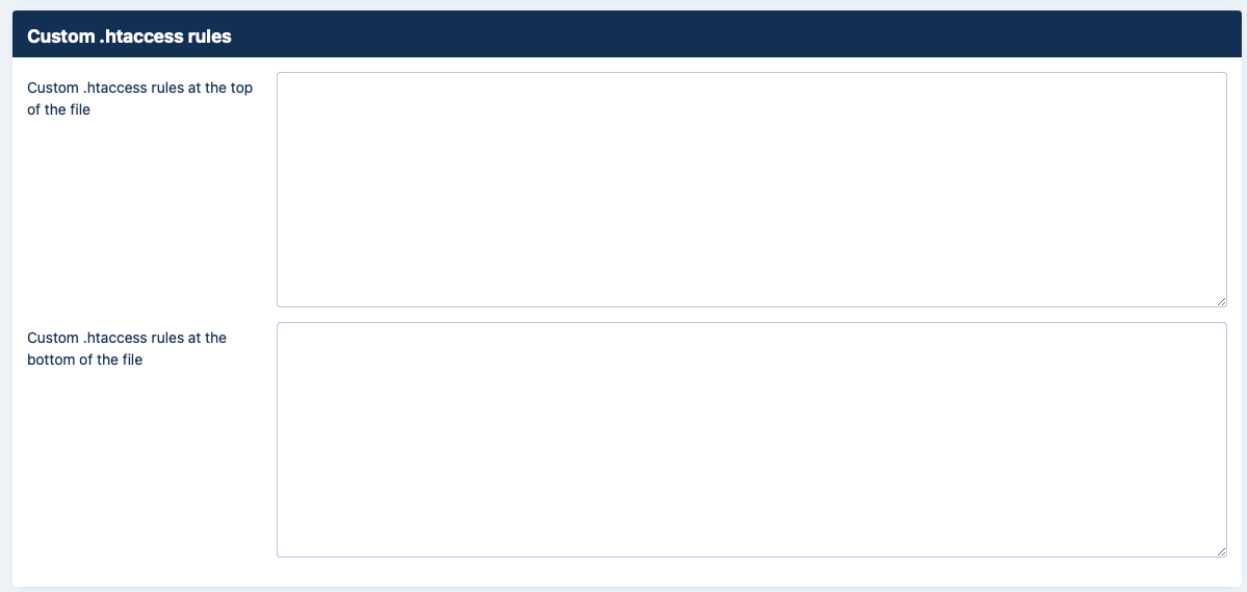
If the files you see have a .php extension things are easier but also more nuanced. You can always add the path to the folder in the Allow direct access, including .php files, to these directories list. *This is potentially insecure*. It allows direct web access to all files in that folder and all of its subdirectories, bypassing Joomla! and Admin Tools entirely. If there are files with privileged information they will be accessible to everyone. If the .php files have a security issue in them you will get hacked. This is why we DO NOT advise you to do that.

What we do advise you to do is contact the developer of the offending extension and ask them to fix their code to always go through Joomla's index.php files (e.g. using com_ajax). If they decline to do that you should consider using a different extension. There is absolutely no reason whatosever to have directly accessible .php files in Joomla! since 2013. Well, actually, there is one: when you are overwriting Joomla! itself. Since Joomla! is being overwritten with a different version you cannot also use it at the same time, thus making the only valid use case of not going through Joomla. This is exactly what the restore.php files in com_joomlaupdate (the Joomla! Update component which is part of Joomla! itself) and Akeeba Backup (when restoring a backup) do and that's why they are the only two built-in exceptions in Admin Tools. Both files were written by Akeeba Ltd, they are locked when you are not actively updating/restoring a site, they are protected with a password when you are actively updating/restoring a site and they have been audited by independent security researchers several times.

Finally, a special mention is due for extensions which try to access files stored in the `cache`, `logs` or `tmp` directories in the front- and backend of your site. These directories are NOT meant to be web accessible. In fact, they are designed in such a way that it's possible to move them outside of your site's web root. Moreover, their content is supposed to be transient, i.e. it is expected to be deleted at any point in time and the extension is supposed to not break when that happens. Web accessible files generated by extensions are supposed to go into the `media` folder in the root of your instead. This folder has been available since Joomla! 1.5.0 came out in 2007. Any developer who does not understand a concept introduced over a decade ago is certainly not following security best practices. As a result *we very strongly recommend NOT using these extensions, ever, at all cost*.

6.3. Custom .htaccess rules

Custom .htaccess rules



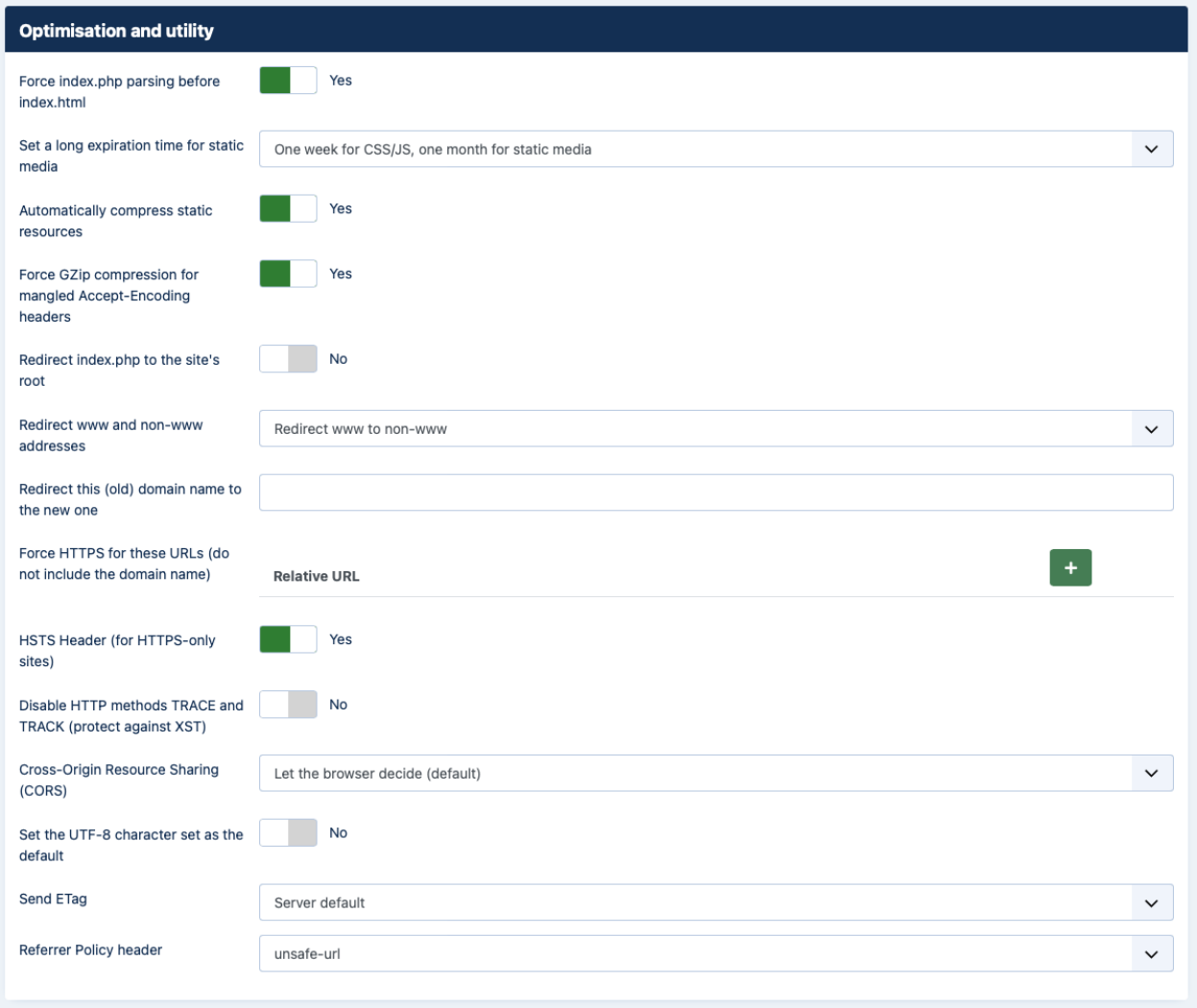
Sometimes you just need to add custom .htaccess rules beyond what the .htaccess Maker can offer. Such examples can be special directives your host told you to include in your .htaccess file to enable a different version of PHP, change the server's default error documents and so on. If you are an advanced user you may also want to write your own advanced rules to further customize the behaviour of the Server Protection. The two options in this section allow you to do that.

The contents of the Custom .htaccess rules at the top of the file text area will be output at the top of the file, just after the RewriteEngine On directive. You should put custom exception rules and, generally, anything which should run before the protection and security rules in here.

The contents of the Custom .htaccess rules at the bottom of the file text area are appended to the end of the .htaccess file. This is the place to put stuff like directives to enable a different PHP version and any optimizations which should run only after the request has passed through the security and server protection rules.

6.4. Optimisation and utility

Optimisation and utility



This section contains directives which are of utilitarian value and bound to save you some time:

Force index.php parsing before index.html
: Some servers attempt to serve index.html before index.php. This has the implication that trying to access your site's root, e.g. `http://www.example.com`, will attempt to serve an index.html first. If this file doesn't exist, it will try to serve index.php. However, all of our Joomla! sites only have the index.php, so this checking slows them down unnecessarily on each page request. This rule works around this problem. Do note that some servers do not allow this and will result in a blank page or Internal Server Error page.

Set a long expiration time for static media
: If your server has mod_expires installed and activated, enabling this option will cause all files and pages served from the site to have an expiration time between 1 week or 1 month (depending

from the media), which means that the browser will not try to load them over the network until that time has passed. This is a very desirable feature, as it speeds up your site.

Automatically compress static resources

Enabling this option instructs the server to send plain text, HTML, XML, CSS, XHTML, RSS and Javascript pages and files to the browser after compressing them with GZip. This significantly reduces the amount of data transferred and speeds up the site. On the downside some very old browsers, like Internet Explorer 6, might have trouble loading the site.

Force GZip compression for mangled Accept-Encoding headers

Note

This feature REQUIRES the Automatically compress static resources feature to be enabled.

Up to 15% of visitors to your site may not receive compressed resources when visiting your site, even though you have enabled Automatically compress static resources feature above. The reasoning in explained in detail by Yahoo engineers [https://developer.yahoo.com/blogs/ydn/pushing-beyond-gzipping-25601.html]. Enabling the Force GZip compression for mangled Accept-Encoding headers feature will allow clients (browsers) which send mangled Accept headers to be served compressed content, improving the perceived performance of your site for them.

Redirect index.php to the site's root

Normally, accessing your site as `http://www.example.com` and `http://www.example.com/index.php` will result in the same page being loaded. Except for the cosmetic issue of this behaviour it may also be bad for search engine optimization as search engines understand this as two different pages with the same content ("duplicate content"). Enabling this option will redirect requests to index.php, without additional parameter, to your site's root overriding this issue.

Redirect www and non-www adresses

Most web servers are designed to treat www and non-www URLs in the same way. For example, if your site is `http://www.example.com` then most servers will also display it if called as `http://example.com`. This has many adverse effects. For starters, if a user accesses the www site, logs in and then visits the non-www site he's no longer logged in, causing a functional issue with your site's users. Moreover, the duplicate content rules also apply in this case. That's why we suggest that you enable one of the redirection settings of this option. The different settings are:

- Do not redirect. It does no redirection (turns this feature off)
- Redirect non-www to www. Requests to the non-www site will be redirected to the www site, e.g. `http://example.com` will be redirected to `http://www.example.com`.
- Redirect www to non-www. Requests to the www site will be redirected to the non-www site, e.g. `http://www.example.com` will be redirected to `http://example.com`.

Redirect this (old) domain name to the new one

Sometimes you have to migrate your site to a new domain, as we did migrating from joomlapack.net to akeebabackup.com. Usually this is done transparently, having both domains attached to the same site on the hosting level. However, while a visitor can access the old domain name, the address bar on his browser will still show the old domain name and search engines will believe that you have set up a duplicate content site, sending to the darkest hole of search engine results. Not good! So, you'd better redirect the old domain to the new domain with a 301 redirection to alert both users and search engines about the name change. This is what this option does. You can include several old domains separated by commas. For example:

```
joomlapack.net, www.joomlapack.net
```

will redirect all access attempts to joomlapack.net and www.joomlapack.net to the new domain.

Force HTTPS for these URLs (do not include the domain name)

Under regular circumstances Joomla! should be able to automatically redirect certain menu items to a secure (HTTPS) address. However, this is not possible if the HTTPS domain name and the HTTP domain name are not the same, as is casual with many shared hosts. Since Admin Tools supports custom HTTPS domain names you can use this feature to make up for the lack of functionality in Joomla! itself. Use one URL per line and do not include http:// and your domain name. For example, if you want to redirect `http://www.example.com/eshop.html` to `https://www.example.com/eshop.html` you have to enter `eshop.html` in a new line of this field. Easy, isn't it?

HSTS Header (for HTTPS-only sites)

Assuming that you have a site which is only supposed to be accessed over HTTPS, your visitor's web browser has no idea that the site should not be ever accessed over HTTP. Joomla! offers a Global Configuration setting to force SSL throughout the entire site, but this is merely a workaround: if it sees a request coming through HTTP it will forward it to HTTPS. There are two privacy implications for your users:

- If you have not enabled the SSL option in Global Configuration a man-in-the-middle attack known as "SSL Stripping" is possible. In this case the user will access your site over plain HTTP without having any idea that they should be using HTTPS instead.
- Even if Joomla! forwards your user to HTTPS the unencrypted (HTTP) request can still be logged by an attacker. With a moderate amount of sophistication on the part of the attacker (basically, some $200 hardware an widely available information) they can efficiently eavesdrop *at the very least* the URLs visited by your user –undetected but to the most vigilant geeks among your users– and probably infer information about them.

The HSTS header can fix SSL Stripping attacks by instructing the browser to always use HTTPS for this website, even if the protocol used in a URL is HTTP. The browser, having seen this header, will always use HTTPS for your site. An SSL Stripping and other man-in-the-middle attacks are possible only if your user visits your site *for the first time* in a hostile environment. This is usually not the case, therefore the HSTS header can provide real benefits to the privacy of your users.

For more information on what the HSTS header is and how it can protect your site visitors' privacy you can read the Wikipedia entry on HSTS [http://en.wikipedia.org/wiki/HTTP_Strict_Transport_Security].

Important

Enabling HSTS will also have the following side effects which are designed to prevent unsafe HTTP redirections and cookie leaking:

- If your site is accessed over HTTP there will be a redirection to the HTTPS domain name, as configured in the .htaccess Maker. In previous versions no such redirection took place.
- non-www to www redirection and vice versa will always redirect requests to the HTTPS version of the domain name, even if you access it over http. In previous versions we were always using plain HTTP.
- Old to new domain redirection will always redirect to the HTTPS domain name, as configured in the .htaccess Maker. In previous versions all redirections were made to the HTTP domain name, as configured in the .htaccess Maker.
- The HSTS header is only sent over HTTPS requests, not over HTTP requests, per HSTS header best practices. Previously it was send over HTTP requests which is not advisable.

Most sites will not notice any difference. If you have a strange setup with different HTTP domain names assigned to the same site but only one HTTPS domain (e.g. a shared SSL setup) you may experience redirection issues. In this case we advise you to disable HSTS. Instead, add the following directive in the "Custom .htaccess rules at the bottom of the file" area:

```
Header always set Strict-Transport-Security "max-age=31536000"
```

Disable HTTP methods TRACE and TRACK (protect against XST)

Enabling this option will prevent remote clients from using the HTTP methods TRACE and TRACK to connect to your site. These can be used by hackers to perform privilege escalation attacks known as Cross Site Tracing (XST) [https://www.owasp.org/index.php/Cross_Site_Tracing]. To the best of our knowledge there are no side-effects to enabling this feature.

Cross-Origin Resource Sharing (CORS)

By default a third party site cannot load content from your site using an AJAX request since your content is in a different domain than the site hosting the Javascript performing the request. Using CORS you can circumvent this problem, allowing third party sites' Javascript to load content from your site.

There are three settings for this option. **Explicitly disallowed** will tell browsers that you do not with your site's resources to be accessible from any other domain name whatsoever. **Let the browser decide (default)** will not set any headers and let the browser decide whether to allow access to your site from a different domain name; this may work a bit differently in older browsers which MIGHT allow subdomains of your site to have access. Use this option if you plan on setting up CORS headers yourself, either in custom .htaccess code or through server-side scripting e.g. as part of the response of a component. Finally, **Explicitly allowed** will tell browsers that you want your site's resources to be accessible for any other domain.

When you use any of the explicit options the appropriate Access-Control-Allow-Origin and Timing-Allow-Origin HTTP headers will be set for all requests. For more information on CORS please consult the Enable CORS [http://enable-cors.org/] site.

Set the UTF-8 character set as the default

Some servers use the legacy ISO-8859-1 character set as the default when serving content. While Joomla! pages will appear correctly –Joomla! sends a content encoding header– other content such as JSON data, CSV exports and Admin Tools' messages to blocked users may appear incorrectly if they're using international characters. If you're unsure, try enabling this option.

Send ETag

Your web server sends an ETag header with each **static** file it serves. Browsers will ask the server in subsequent requests whether the file has a different ETag. If not, they will serve the same file therefore reducing the amount of data they need to transfer from the server (and making the site load faster). By default ETags are calculated based on the file size, last modified date and the inode number. The latter depends on the location of the file inside the filesystem of the server.

When you have a site hosted on a single server this is great. If your static files are, however, hosted on a server farm this may not be a good idea. The reason is that every static file is stored on different server and while the file size and last modified date might be the same the inode number will differ, therefore causing the browser to perform unnecessary file transfers. This is where this option comes in handy.

Important

Do NOT change this option if your site is hosted on just one server. If you are not sure or have no idea what that means then your site **is** hosted on just one server and you MUST NOT change this option. Please bear in mind that site speed analysers like YSlow are

designed for gigantic sites running off *hundreds or thousands of servers*. Their site speed checklists DO NOT work well with the vast majority of sites you are working on, i.e. very small sites running off a single server. Treat these checklists as suggestions: you need to exercise common sense, not blindly follow them. If you disable ETags on a small site you are more likely to do harm than good!

The available options are:

- **Server default**. Use whatever setting the server administrator has chosen. If you are not perfectly sure you know what you're doing choose this option.
- **Full**. Send ETags based on file size, last modification date/time and inode number.
- **Size and Time**. Send ETags based on file size and last modification date/time only.
- **Size only**. Send ETags based on file size only.
- **None (no ETag sent)**. Disable ETags completely. Do keep in mind that if you do not also enable the Set default expiration option you will be hurting your site's performance!

Referrer Policy Header

While surfing, your browser will send out some information about the previous you were visiting (the Referrer that brought you to the new page). This is useful for analytics, for example you can easily track down how many visitors came from Twitter or any other page.

However, there are security implications about the Referrer header. What if on the private area of your website there are sensible information? Think about a private support area, where there is a ticket with the link www.example.com/private-support/help-my-site-www-foobar-com-is-hacked ; you post a reply with a link to a Stack Overflow reply, the user clicks on it and... whops! Now Stack Overflow knows that the site www.foobar.com was hacked.

The Referrer Policy header will instruct your browser when to send the Referrer header and how many information you want to share.

- **Do not set any policy** You're not setting any instruction to the browser
- **(Empty)** You do not want to set the Referrer Policy here (as header) and the browser should fallback to other mechanisms, for example using the `<meta>` element or the `referrerpolicy` attribute on `<a>` and `<link>` elelements.
- **no-referrer** Never send the referer header
- **no-referrer-when-downgrade** The browser will not send the referrer header when navigating from HTTPS to HTTP, but will always send the full URL in the referrer header when navigating from HTTP to any origin. It doesn't matter whether the source and destination are the same site or not, only the scheme.

Source	Destination	Referrer
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
http://www.yoursite.com/url1	http://www.yoursite.com/url2	http://www.yoursite.com/url1
http://www.yoursite.com/url1	http://www.example.com	http://www.yoursite.com/url1
http://www.yoursite.com/url1	https://www.example.com	http://www.yoursite.com/url1

Source	Destination	Referrer
https://www.yoursite.com/url1	http://www.example.com	NULL

- **same-origin** The browser will only set the referrer header on requests to the same origin. If the destination is another origin then no referrer information will be sent.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL
https://www.yoursite.com/url1	https://www.example.com	NULL

- **origin** The browser will always set the referrer header to the origin from which the request was made. This will strip any path information from the referrer information.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.example.com	https://www.yoursite.com/

Warning

Navigating from HTTPS to HTTP will disclose the secure origin in the HTTP request.

- **strict-origin** This value is similar to `origin` above but will not allow the secure origin to be sent on a HTTP request, only HTTPS.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL
http://www.yoursite.com/url1	https://www.yoursite.com/url2	http://www.yoursite.com/
http://www.yoursite.com/url1	http://www.yoursite.com/url2	http://www.yoursite.com/
http://www.yoursite.com/url1	http://www.example.com	http://www.yoursite.com/

- **origin-when-cross-origin** The browser will send the full URL to requests to the same origin but only send the origin when requests are cross-origin.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	https://www.example.com	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.example.com	https://www.yoursite.com/
http://www.yoursite.com/url1	https://www.yoursite.com/url2	http://www.yoursite.com/

Warning

Navigating from HTTPS to HTTP will disclose the secure URL or origin in the HTTP request.

- **strict-origin-when-cross-origin** Similar to `origin-when-cross-origin` above but will not allow any information to be sent when a scheme downgrade happens (the user is navigating from HTTPS to HTTP).

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	https://www.example.com	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL

- **unsafe-url** The browser will always send the full URL with any request to any origin.

6.5. System configuration

The host name options are used for the HSTS, Redirect www and non-www addresses and Redirect this (old) domain name to the new one features of the .htaccess Maker. The base directory option is used even when all of the .htaccess Maker options are disabled; it's used for the Joomla SEF URL block which cannot be disabled.

As a result, if you transfer your site on a new host you MUST change these configuration parameters to reflect your new server configuration. Do note that this will not happen automatically, even if you are using Akeeba Backup to transfer the site. In fact, you must remove your .htaccess file, change this parameters and then let Admin Tools create a new .htaccess file before you can use your site's front-end.

System configuration

This final section contains all the options which let the .htaccess maker know some of the most basic information pertaining your site and which are used to create the rules for some of the options in the previous section.

Host name for HTTPS requests (without https://)
: Enter the site's domain name for secure (HTTPS) connections. By default, Admin Tools assumes it is the same as your site's domain, but you have to verify it as it may be different on some hosts, especially on shared hosts. Do not use the https:// prefix, just the domain name and path to your site. For example, if the address is `https://www.example.com/joomla` then type in `www.example.com/joomla`.

Host name for HTTP requests (without http://)
: Enter the site's domain name for regular (HTTP) connections. By default, Admin Tools assumes it is the same as the address you are connected to right now, but you have to verify it. Do not use the http:// prefix, just the domain name and path to your site. For example, if the address to your site's root is `http://www.example.com/joomla` then type in `www.example.com/joomla`.

Base directory of your site
: This is the directory where your site is installed. For example, if it is installed in a directory named `joomla` and you access it on a URL similar to `http://www.example.com/joomla` you have to type in `/joomla` in here. If your site is installed on the root of your domain, please use a single forward slash for this field: `/`

Follow Symlinks
: Joomla! normally does not create symlinks and does not need symlinks. At the same time, hackers who have infiltrated a site do use symlinks to get read access to files that are normally outside the reach of the web site they have hacked. This is why this option exists. You can set it to:

  - **Default**. It's up to your host to determine if symlinks will be followed. Use this if the other options cause problems to your site.
  - **Yes, always**. This is the insecure option. If you use it keep in mind that in the event of a hack all world-readable files on the server may be compromised. Really, it's a BAD idea. Worse than bad, it's a horrible idea. Don't use it.
  - **Only if owner matches**. That's the safe approach to enabling symlinks. They will be followed only if the owner of the symlink matches the owner of the file/directory it links to.

  If you have no idea what that means, first try setting this option to "Only if owner matches". If this results in a blank page or an Internal Server Error 500 then set this to "Default". For more information please consult Apache's documentation or Joomla!'s htaccess.txt file.

7. The NginX configuration maker

Note

This feature is only available in the Professional release

Warning

This feature is only available on servers running the NginX web server. If your server is using Apache or IIS the button to launch this feature will not be shown. If the server type cannot be detected you will see this feature but you should consult with your host whether it will have any effect and how to use it..

One of the most important aspects of managing a web site hosted on an NginX server is being able to fine-tune your site configuration file. This file is responsible for many web server level tweaks, such as enabling the use of search engine friendly (SEF) URLs, blocking access to system files which should not be accessible from the web, redirecting between pages based on custom criteria and even optimising the performance of your site. On the downside, learning how to tweak all those settings is akin to learning a foreign language. The NginX Configuration Maker tool of Admin Tools is designed to help you create the part of such a file used for security and performance optimisation with a user-friendly interface.

Tip

If you ever want to revert to a "safe default", just set all of the options on this page to "Off" and click on "Save and create nginx.conf". This will create a very basic nginx.conf file.

One very important aspect of NginX is that, unlike Apache, the site configuration file is not magically loaded on every request. When using this feature you will have to do two things:

1. **Make sure NginX can load the nginx.conf file**. Admin Tools writes the (partial) NginX configuration file `nginx.conf` in the root of your site. By default, NginX won't even know this file is there! You need to include it in your site's definition file by adding a directive like this:

   ```
   include /home/myuser/www/nginx.conf;
   ```

   The exact path to the file is shown in Admin Tools' NginX Configuration Maker page itself. You only need to do this ONCE.

   If your host doesn't allow you to do that they might be giving you a way to add custom NginX configuration variables. In this case use the Preview button in the NginX Configuration Maker page to get the raw NginX configuration commands and give them to your host for inclusion in the NginX configuration.

   If you have a choice between these two methods of providing the custom NginX configuration to your server *please use the second one*. It's harder to manage but it's far more secure. The first method of having your NginX server include a configuration file off the web root is not a good idea as far as security is concerned: a sly attacker could modify that file to their benefit and just wait for the NginX server to restart. Ideally, that first method should only be used on a private test server which is not accessible from the Internet and only for debugging and development purposes.

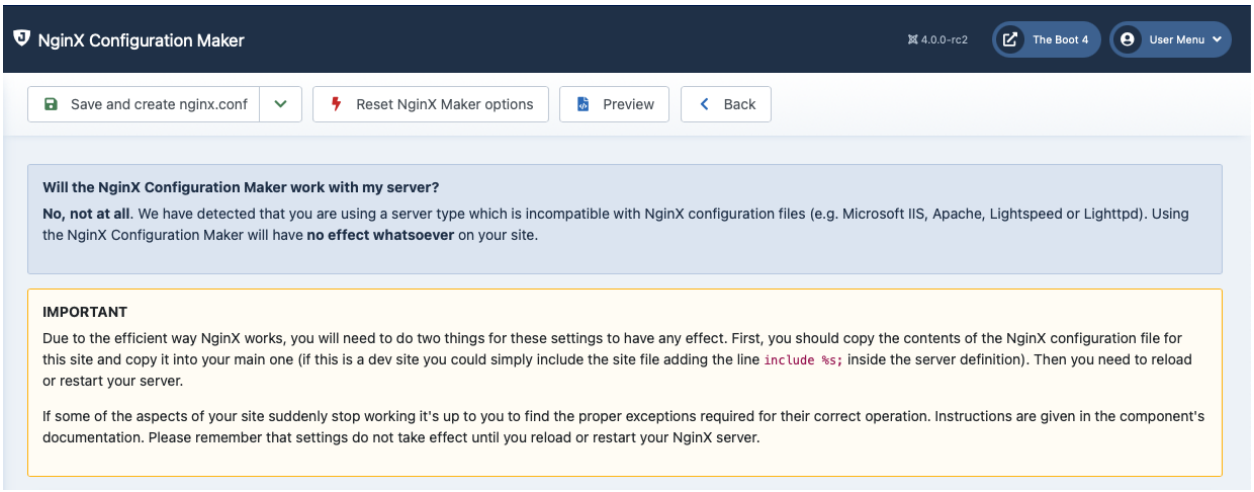
   If your host doesn't allow you to provide custom NginX configuration, sorry, you're out of luck: you will not be able to use this feature of Admin Tools.

2. **Reload or restart your NginX server**. Remember that modifying the NginX configuration has NO EFFECT until you reload or restart the NginX server. This is part of what makes NginX so incredibly fast.

FInally, do note that the NginX configuration maker makes the assumption that you've configured PHP to run through FastCGI using the exact method described in NginX's documentation [http://wiki.nginx.org/PHPFcgiExample]. If you're using a different method to enable PHP on your NginX server the generated configuration may not work on your server or even cause problems accessing your web site.

The top part of the NginX configuration maker page contains the standard toolbar buttons you'd expect:

The NginX Configuration Maker's toolbar



- Save and create nginx.conf saves the changes you have made in this page's options and creates the new `nginx.conf` file. If you already had a `nginx.conf` file on your site, it will be renamed to `nginx.admintools` before the new file is written to disk.
- Save without creating nginx.conf (visible after clicking the dropdown arrow next to the previous button) saves the changes you have made in this page's options without creating a new `nginx.conf` file. This should be used when you have not decided on some options yet, or if you want to preview the generated `nginx.conf` file before writing it to disk.
- Reset NginX Maker options will reset all options on the page to the default settings you'd see when first installing Admin Tools. Please note that this is NOT the same as turning off every option! The default settings have several features turned on. Use this button only when you feel you've messed up so bad you don't even know where to begin fixing things.
- Preview pops up a dialog where you can see how the generated `nginx.conf` file will look like without writing it to disk. This dialog shows the saved configuration. If you have modified any settings they will not be reflected in there until you click either of the save buttons.

  This feature comes in handy in a different way as well. It's generally a bad idea having your server configuration in the public web root of your site (the `nginx.conf` file). Instead, you can copy the generated code from the preview and insert it to your server's configuration. The exact way to do that and whether it needs some manual editing is host- and server-specific. If unsure, ask your host. NginX is a developer-friendly web server, not an end-user-friendly server. Make sure you understand what you're doing.
- The Back button takes you back to the Control Panel page.

Below the toolbar there are several panes with different options, described below. Before you do that, please read the following paragraphs.

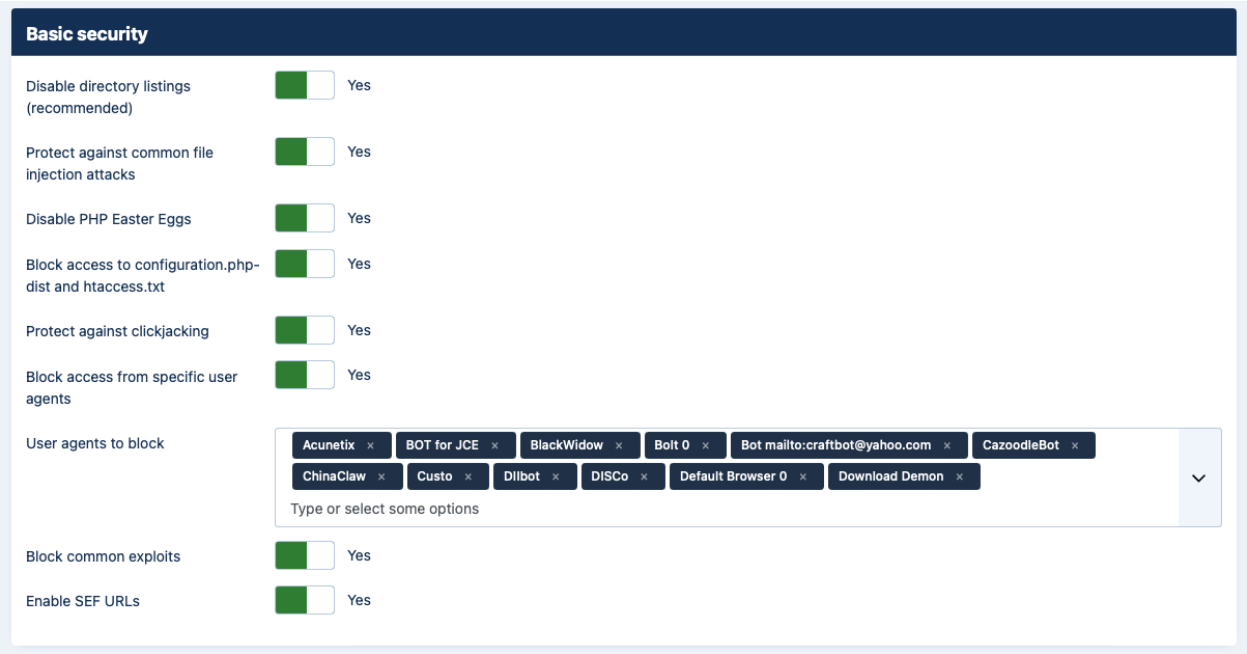
Depending on your web server settings, some of these options may be incompatible with your site. In this case you will get a blank page or an Internal Server Error 500 error page when trying to access any part of your site. If this happens,

you have to remove the contents of `nginx.conf` file from your site's root directory using an FTP application or the File Manager feature of your hosting control panel OR remove all custom configuration from your NginX site configuration file (depending on which method you chose). Then you MUST reload or restart NginX for the changes to take effect.

We strongly suggest that you begin by setting all options to No and then enable them one by one, creating a new configuration (and reloading your NginX server) after you have enabled each one of them. If you bump into a blank or error page you will know that the last option you tried is incompatible with your host. Unfortunately, there is no other way than trial and error to deduce which options may be incompatible with your server.

7.1. Basic Security

Basic security



Disable directory listings (recommended)

When disabled, your web server might list the files and subdirectories of any directory on your site if there is no index.html file inside it. This can pose a security risk, so you should always enable this option to avoid this from happening.

Protect against common file injection attacks

Many attackers try to exploit vulnerable extensions on your site by tricking them into including malicious code hosted on the attacker's server. Enabling this option will protect your server against this kind of attacks. This works by preventing any URL which references an http:// or https:// URL in the query string. Sometimes these are legitimate requests. For example, some gallery components use them. In this case you are recommended to use the RFIShield (Remote File Inclusion protection) in the Web Application Firewall and turn this NginX Configuration Maker option OFF.

Disable PHP Easter Eggs

PHP has a fun and annoying feature known as "Easter Eggs". By passing a special URL parameter, PHP will display a picture instead of the actual page requested. Whereas this is considered fun, it is also widely exploited by attackers to figure out the version of your PHP installation (these images change between different versions of PHP) and launch hacking attacks targeting your specific PHP version. By enabling this option you completely disable access to those Easter Eggs and make it even more difficult for attackers to figure out the details of your server.

Note: You are advised to also set *expose_php* to `Off` in your `php.ini` file to prevent accidental leaks of your PHP version.

Block access to configuration.php-dist and htaccess.txt

These two files are left behind after any Joomla! installation or upgrade and can be directly accessed from the web. They are used by attackers to tell the Joomla! version you are using, so that they can tailor an attack targeting your specific Joomla! version. Enabling this option will "hide" those files when accessed from the web (a 404 Not Found page is returned), tricking attackers into believing that these files do not exist and making it slightly more difficult for them to deduce information about your site. This option also hides the web.config.txt file included in Joomla! 3 and later for use with the IIS server.

Protect against clickjacking

Turning on this option will protect you against clickjacking [http://en.wikipedia.org/wiki/Clickjacking]. It does so by preventing your site's pages to be loaded in a, Frame, IFrame or Object tag unless this comes from a page inside your own site. Please note that if your site relies on its pages being accessible through frames / iframes displayed on other sites (NOT on your site displaying content from other sites, that's irrelevant!) then you should not enable this option. If unsure, enable it.

Block access from specific user agents

When enabled, it will block any site access attempt if the remote program sends one of the user agent strings in the User agents to block, one per line option. This feature is designed to protect your site against common bandwidth-hogging download bots and otherwise legitimate tools which are more usually used for hacking sites than their benign intended functionality.

User agents to block

The user agent strings to block from accessing your site. You don't have to enter the whole UA string, just a part of it. The default setting includes several usual suspects.

You can type new entries by clicking at the end of the list, type the entry and press ENTER to accept it. Delete items using the X button next to each entry.

Do note that some server with mod_security or mod_evasive installed will throw an "Access forbidden" message if you try to save the configuration settings when this field contains the word "WGet". If you come across this issue it is not a bug with Admin Tools or Joomla!, it is a server-level protection feature kicking in. Just avoid including the word Wget and you should be out of harm's way.

Default list of user agents to block

The following is the default list of user agents to block. It is very thorough and seems to be reducing the number of attacks enormously. If you are upgrading from an earlier version you might want to try it out.

```
WebBandit
webbandit
Acunetix
binlar
BlackWidow
Bolt 0
Bot mailto:craftbot@yahoo.com
BOT for JCE
casper
checkprivacy
ChinaClaw
clshttp
cmsworldmap
```

```
comodo
Custo
Default Browser 0
diavol
DIIbot
DISCo
dotbot
Download Demon
eCatch
EirGrabber
EmailCollector
EmailSiphon
EmailWolf
Express WebPictures
extract
ExtractorPro
EyeNetIE
feedfinder
FHscan
FlashGet
flicky
GetRight
GetWeb!
Go-Ahead-Got-It
Go!Zilla
grab
GrabNet
Grafula
harvest
HMView
ia_archiver
Image Stripper
Image Sucker
InterGET
Internet Ninja
InternetSeer.com
jakarta
Java
JetCar
JOC Web Spider
kmccrew
larbin
LeechFTP
libwww
Mass Downloader
Maxthon$
microsoft.url
MIDown tool
miner
Mister PiX
NEWT
MSFrontPage
Navroad
NearSite
```

```
Net Vampire
NetAnts
NetSpider
NetZIP
nutch
Octopus
Offline Explorer
Offline Navigator
PageGrabber
Papa Foto
pavuk
pcBrowser
PeoplePal
planetwork
psbot
purebot
pycurl
RealDownload
ReGet
Rippers 0
SeaMonkey$
sitecheck.internetseer.com
SiteSnagger
skygrid
SmartDownload
sucker
SuperBot
SuperHTTP
Surfbot
tAkeOut
Teleport Pro
Toata dragostea mea pentru diavola
turnit
vikspider
VoidEYE
Web Image Collector
Web Sucker
WebAuto
WebCopier
WebFetch
WebGo IS
WebLeacher
WebReaper
WebSauger
Website eXtractor
Website Quester
WebStripper
WebWhacker
WebZIP
Wget
Widow
WWW-Mechanize
WWWOFFLE
Xaldon WebSpider
```

```
Yandex
Zeus
zmeu
CazoodleBot
discobot
ecxi
GT::WWW
heritrix
HTTP::Lite
HTTrack
ia_archiver
id-search
id-search.org
IDBot
Indy Library
IRLbot
ISC Systems iRc Search 2.1
LinksManager.com_bot
linkwalker
lwp-trivial
MFC_Tear_Sample
Microsoft URL Control
Missigua Locator
panscient.com
PECL::HTTP
PHPCrawl
PleaseCrawl
SBIder
Snoopy
Steeler
URI::Fetch
urllib
Web Sucker
webalta
WebCollage
Wells Search II
WEP Search
zermelo
ZyBorg
Indy Library
libwww-perl
Go!Zilla
TurnitinBot
sqlmap
```

Block common exploits — Enabling this option will include a set of options recommended by Joomla! to protect against (obsolete) common exploits which no longer have any effect on Joomla! 2.5 and later. It's still a good idea to enable this option as a means to reduce the number of unnecessary requests to your site.

Enable SEF URLs — Enabling this option will allow your site to use SEF (a.k.a. "beautiful") URLs, with or without index.php in them. You are recommended to leave this option turned on unless you have a custom URL forwarding setup already in place.

7.2. Server protection

Server protection (partial screenshot)

This feature is based on the principle of ‘nothing runs on my site unless I explicitly allow it’ a.k.a. ‘deny-first’. This is a great policy which puts you in total control of your site, greatly reducing your attack surface area.

By blocking access to front-end and back-end elements (media files, Javascript, CSS and PHP files) it makes it extremely hard —but not outright impossible— for an attacker to hack your site, even if he manages to exploit a security vulnerability to upload malicious PHP code to your site. Additionally, it will deny direct access to resources not designed to be directly accessible from the web, such as translation INI files, which are usually used by attackers to find out which version of Joomla and its extensions you are running on your site to tailor an attack to your site.

On the downside, you have to explicitly enable access to some extensions' PHP files which are designed to be called directly from the web and not through Joomla!'s main file, `index.php`.

Do note that enabling this feature will kill the functionality of some extensions which create arbitrarily named PHP files throughout your site. In our humble opinion the security risk of having your site unprotected greatly outweighs the benefits of such extensions. As a result, we strongly suggest disabling these extensions.

There are three sections of configuration settings controlling the functionality of the Server Protection feature. In short, you have controls for protecting the backend of your site (everything under the administrator directory), the frontend of the site (everything NOT under the administrator directory) and exceptions to these rules.

Starting with the backend section we see the following options:

Back-end protection	Disables direct access to most back-end resources, except those in the exceptions lists. It is generally recommended to turn it on to enhance the protection of your site, unless you have enabled the administrator password protection feature. In the latter case this option is redundant and we recommend turning it off.
Back-end directories where file type exceptions are allowed	This is a list of back-end directories (that is, subdirectories of your site's administrator directory) where you expect media files to be present. Place one directory on each line. Subdirectories of those directories are automatically added to the exceptions list without having to explicitly list them here. You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You must not type the administrator/ prefix. As

you can see, it's already added for you and can't be removed. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

Back-end file types allowed in selected directories
: The extensions of back-end files which allowed to pass through the server protection filter, as long as the files with those extensions are in the list above. Do not type the leading dot for each file extension. Add file extensions by clicking at the end of the list, typing the extension and pressing ENTER. Delete file extensions by pressing the X next to them. Extensions are case–insensitive as of 7.0.6; this means that entering pdf will also match the extensions PDF and Pdf. The convention is to type in the extensions in lowercase. Regardless of the case–insensitivity of Admin Tools, it is a good idea to have the *extensions* of the files you upload in lowercase to avoid issues with third party extensions, Joomla itself and software running on case–sensitive–aware Operating Systems such as Linux.

Disable client-side risky behavior in backend static content
: Certain static media types, such as HTML and SVG, may contain client-side scripts in JavaScript. It would be possible for an attacker to use a legitimate site feature or a vulnerability on your site to upload such an HTML or SVG file to one of the “Back-end directories where file type exceptions are allowed” folders or otherwise trick a Super User to do that. Then, they could exploit a well-meaning, legitimate feature of your site or otherwise trick a Super User into opening that file on their browser while they are logged into your site as a Super User. The client-side script could therefore “steal” the Super User's cookie, send it to the attacker who can now impersonate the Super User on the site.

  When you enable this option, the allowed static media types in these directories will have a Content-Security-Policy header forcibly applied to them which tells the browser to not let them load any external script or execute any inline script or scriptable attribute, thereby neutering client-side script execution.

  If you have a few select files which need client-side scripting, e.g. forms, animation demos etc, we recommend that you allow them explicitly in the Exceptions section described further below this documentation. If you can't enumerate all of these files you can disable this option but bear in mind that this reduces the security of your site.

Next up, we have the front-end section:

Front-end protection
: Disables direct access to most front-end resources, except those in the exceptions lists. It is generally recommended to turn it on to enhance the protection of your site.

Front-end directories where file type exceptions are allowed
: This is a list of front-end directories (that is, directories in your site's root) where you expect media files to be present. Place one directory on each line. Subdirectories of those directories are automatically added to the exceptions list without having to explicitly list them here.

Front-end file types allowed in selected directories
: The extensions of front-end files which allowed to pass through the server protection filter, as long as the files with those extensions are in the list above. Place one file extension per line, without the dot. For example, if you want to allow access to all PDF files you have to type in "pdf" (without the quotes) on a new line of this list. Extensions are case–insensitive as of 7.0.6; this means that entering pdf will also match the extensions PDF and Pdf. The convention is to type in the extensions in lowercase. Regardless of the case–insensitivity of Admin Tools, it is a good idea to have the *extensions* of the files you upload in lowercase to avoid issues with third party extensions, Joomla itself and software running on case–sensitive–aware Operating Systems such as Linux.

Disable client-side risky behavior in
: Certain static media types, such as HTML and SVG, may contain client-side scripts in JavaScript. It would be possible for an attacker to use a legitimate site feature or a vulnerability on your site to upload such an HTML or SVG file to one of the “Front-end directories where file type exceptions

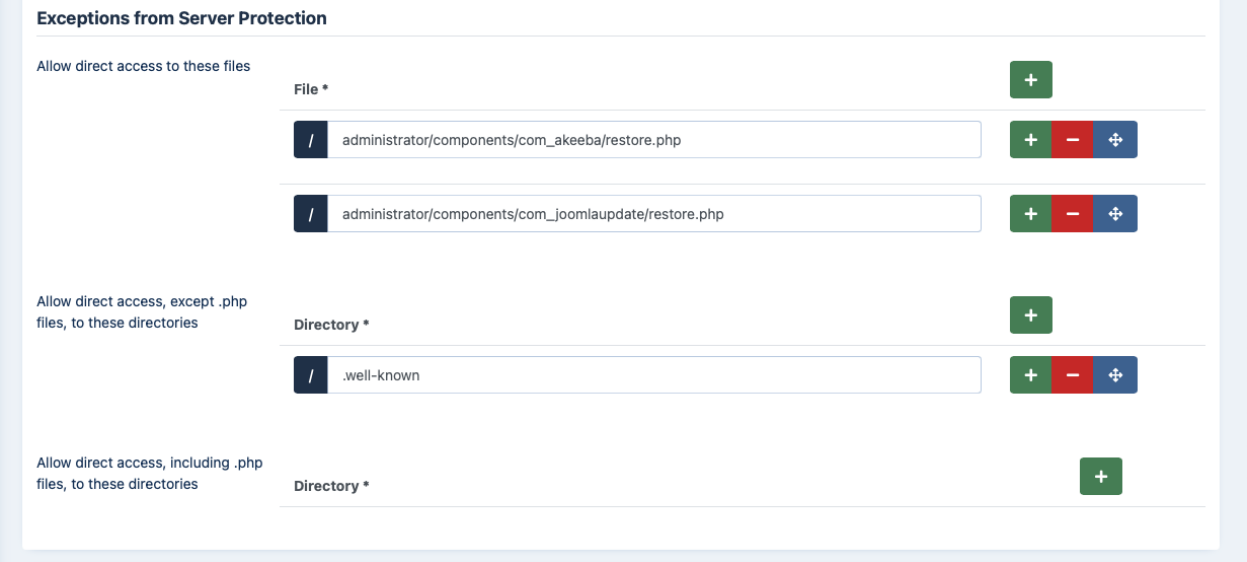
frontend static content

are allowed" folders or otherwise trick a Super User to do that. Then, they could exploit a well-meaning, legitimate feature of your site or otherwise trick a Super User into opening that file on their browser while they are logged into your site as a Super User. The client-side script could therefore "steal" the Super User's cookie, send it to the attacker who can now impersonate the Super User on the site.

When you enable this option, the allowed static media types in these directories will have a Content-Security-Policy header forcibly applied to them which tells the browser to not let them load any external script or execute any inline script or scriptable attribute, thereby neutering client-side script execution.

If you have a few select files which need client-side scripting, e.g. forms, animation demos etc, we recommend that you allow them explicitly in the Exceptions section described further below this documentation. If you can't enumerate all of these files you can disable this option but bear in mind that this reduces the security of your site.

Exceptions



Finally, we have the Exceptions section. This allows specific files or all files in specific directories to pass through the Server Protection filter without further questions. This may be required for several reasons.

For starters, some extensions need to directly access PHP files, without passing them through Joomla!'s main files. One such example is Akeeba Backup Professional's `restore.php` used in the integrated restoration feature, as it would be impossible to use the index.php of a site which is in a state of flux while the restoration is underway.

Other examples are CSS and Javascript minifiers, either included in your template or installed in your site. Forum extensions are also part of the same problem, as they tend to create a dedicated directory for their attachments, avatar icons and so forth. Moreover, some extensions place PHP files inside your site's `tmp` and `cache` directories and expect them to be directly accessible from the web. While this is a frowned upon behaviour, contrary to the design goals of Joomla! itself, you still need a way to work around them and we have to provide it. Finally, you may have a third party script which doesn't install as a Joomla! extension. The Server Protection feature would normally block access to it and you still need a way around this limitation. So here we have those workarounds:

Allow direct access to these files

Place one file per line which should be exempt from filtering, therefore accessible directly from the web. The default settings include Akeeba Backup Professional and, of course, Admin Tools itself.

Please remember that you are entering the **file path** relative to your site's root, not a URL. If you want to allow the URL `http://www.example.com/mysite/components/com_example/foobar.php?test=1&whatever=2` and your site is hosted at `http://www.example.com/mysite` you need to enter `components/com_example/foobar.php` here. Here's how we figured this out. Start by removing the question mark from the URL and everything that's to its right. Then, remove the site's root URL from the left part of the remaining URL. Finally, remove the leading forward slash — as you can see, it's already included for you and you can't remove it.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. Please note that the path separator is the forward slash (/), even on Windows.

Allow direct access, except .php files, to these directories

Direct access to all files (except for .php files) will be granted if they are inside any of the directories in this list AND their subdirectories. Normally you should only need to add your forum's attachments, avatars and image galleries directories, or other directories where you only intend to store media files. As with all similar options, add one directory per line, without a leading or trailing slash.

This is a middle ground in front-end blocking. You should use this only for folders which have only public content, i.e. if it's in that folder you are OK with it being shared with the rest of the world.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

Allow direct access, including .php files, to these directories

This option should be used sparingly as possible. Each and every directory placed in this list is no longer protected by Server Protection AT ALL and can be potentially used as an entry point to hacking your site. To be clear, if an attacker uploads a malicious file in one of these directories by exploiting a vulnerability which allows them to upload predictably named files in predictably named folders they will be able to access it over the web. This is how sites get hacked. As far as we know there are only three cases when its use is even marginally justifiable:

- If you have installed another Joomla!, WordPress, or any other PHP application in a subdirectory of your site. For example, if you are trying to restore a copy of your site inside a directory named `test` in your site's root you have to add `test` to this list. This is the one and only usage scenario which doesn't compromise your site's security.

- Some templates and template frameworks may wrap their CSS and Javascript inside PHP files in order to deliver them compressed to your browser. While this is a valid technique, it's possible that the list of PHP files is too big to track down and include in the first list of the Exceptions section. In this case you may consider putting the template subdirectory containing those files in this list.

- Some extensions do something silly: they place files inside your site's `tmp` or `cache` directories and expect them to be directly accessible from the web. This is plain wrong because these directories are designed to be protected system directories where direct access should not be allowed, most notably because they might contain sensitive information. However, if you have such extensions you need a way to allow direct access to those directories.

If you decide that convenience is better than security we can't stop you. Add tmp and cache to this list and wish for the best. You are opening a security hole on your site and you do it at your own risk and potential peril.

It's best to use the Allow direct access to these files feature if possible, allowing access only to very specific .php files.

Remember that an attacker who has found an upload vulnerability on your site can upload a malicious script inside one of these folders and use it to hack you. These folders are totally unprotected. That's why we very strongly advise against using this feature unless it's absolutely necessary - keeping in mind that you are, at the same time, leaving a hole in your security defences.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You do not need to type a leading or trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

To figure out which custom exceptions you need to add on your site, take a look at the How to determine which exceptions are required section.

7.2.1. How to determine which exceptions are required

Please refer to the section on determining exceptions under the .htaccess Maker documentation. The exact same process applies. The only difference is that you enter the exceptions in the NginX Conf Maker instead of the .htaccess Maker and you need to restart / reload NginX after adding the exceptions.

7.3. Advanced NginX Settings

Expert settings

This section contains advanced configuration options for use by expert users. If you are unsure you are recommended to leave them as they are. If you are an expert user you are advised to review the values used in the generated configuration file and further tweak them based on the capabilities of your server and the traffic on your site.

Allow IP forwarding — Some sites may be behind a load balanced, caching proxy, CDN, third party web application firewall service etc. We call them collectively "proxies". As a result, all traffic to your site seems

to come from the same IP address, the IP address of the proxy. This makes it impossible to block specific IP addresses which seem to be attacking your site unless you use the “Enable IP Workaround” setting in Admin Tools' Web Application Firewall configuration. However, this only applies to Admin Tools. Joomla itself does not see the correct IP address and some of its features, like the Invisible reCAPTCHA, may not work properly.

This can be worked around at the NginX level. All proxies set the HTTP header X-Forwarded-For which has the IP addresses of all intermediate proxies up to and including the real IP address of the visitor accessing your site. Enabling this option tells NginX to trust the contents of this header and use its information to determine the IP address of the visitor. This is what PHP, therefore Joomla and Admin Tools, will see.

Warning

This feature REQUIRES the ngx_http_realip_module module to be enabled in NginX, see http://nginx.org/en/docs/http/ngx_http_realip_module.html for more information. If the module is not enabled (default) your site will fail to load once you try reloading NginX with the new configuration.

Reverse Proxy / Load Balancer IPs

The downside to the Allow IP Forwarding option is that a malicious actor could “spoof” this header, i.e. set a header with bogus information, to cover up their tracks. Therefore it's important to only trust the X-Forwarded-For HTTP header from specific IPs. This option allows you to set up which IP addresses and address blocks NginX should trust to contain a valid X-Forwarded-For header.

Enter one IP address or IP block in CIDR notation per line. The default setting for this option contains the IPv4 and IPv6 addresses for CloudFlare [https://support.cloudflare.com/hc/en-us/articles/200170706-Does-CloudFlare-have-an-IP-module-for-Nginx-] and Sucuri [https://docs.sucuri.net/website-firewall/troubleshooting/same-ip-for-all-users/#nginx], the two most common use cases.

If your site is behind a load balancer or caching proxy on your host's network you will need to ask your host to provide you with the corresponding IP addresses.

Optimise timeout handling

Enabling this option will create a set of rules which optimise the connection timeout. If you run into problems with lengthy processes (e.g. backups) you are advised to turn this off.

Optimise socket settings

Enabling this option will create a set of rules which optimise the NginX connection pool size.

Optimise TCP performance

Enabling this option will create a set of rules which optimise the TCP/IP performance of NginX and turn the sendfile feature on.

Optimise output buffering

Enabling this option will create a set of rules which optimise the output buffers of NginX for typical servers.

Optimise file handle cache

Enabling this option will create a set of rules which optimise the NginX file handle cache for sites serving large amounts of static content (most Joomla! sites do that: images, CSS and JS are all static content).

Set the default character encoding to utf-8

Enabling this option will set the default output encoding to UTF-8. This is not strictly necessary as Joomla! will do that by default in its output. This is primarily used when serving static content, e.g. CSS and JS files which may contain international characters.

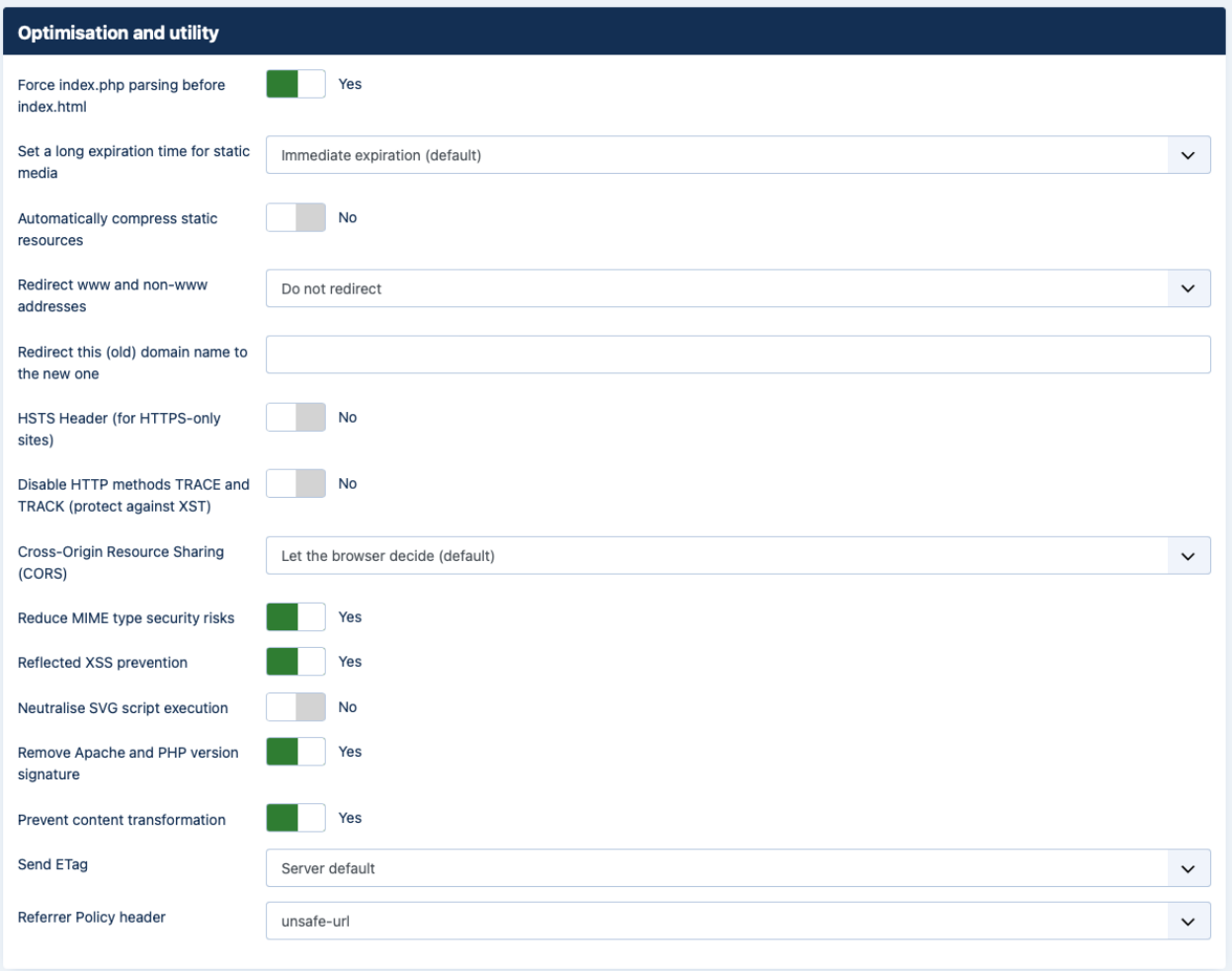
Tighten NginX security settings

Enabling this option will create a set of rules which tighten NginX security: server names are hidden from redirects, the version of NginX is hidden from the output headers and invalid HTTP headers will be ignored.

Set maximum client body size to 1Gb	Enabling this option will set the maximum acceptable client body (usually this means POST and PUT) size to 1 Gb. Please note that you still need to set up the maximum POST size and maximum file upload size in php.ini to accept large uploads on your server.

7.4. Optimisation and utility

Optimisation and utility



This section contains directives which are of utilitarian value and bound to save you some time:

Force index.php parsing before index.html	Some servers attempt to serve index.html before index.php. This has the implication that trying to access your site's root, e.g. `http://www.example.com`, will attempt to serve an index.html first. If this file doesn't exist, it will try to serve index.php. However, all of our Joomla! sites only have the index.php, so this checking slows them down unnecessarily on each page request. This rule works around this problem. Do note that some servers do not allow this and will result in a blank page or Internal Server Error page.
Set a long expiration time for static media	Enabling this option will cause all files and pages served from the site to have a longer expiration time, depending on the setting, which means that the browser will not try to load them over the network before one hour elapses. This is a very desirable feature, as it speeds up your site.

Automatically compress static resources

Enabling this option instructs the server to send plain text, HTML, XML, CSS, XHTML, RSS and Javascript pages and files to the browser after compressing them with GZip. This significantly reduces the amount of data transferred and speeds up the site. On the downside some very old browsers, like Internet Explorer 6, might have trouble loading the site. We do add a directive which instructs NginX to not compress the output when accessed by IE6 but all bets are off with a browser that hasn't been updated for well over a decade...

Redirect www and non-www adresses

Most web servers are designed to treat www and non-www URLs in the same way. For example, if your site is `http://www.example.com` then most servers will also display it if called as `http://example.com`. This has many adverse effects. For starters, if a user accesses the www site, logs in and then visits the non-www site he's no longer logged in, causing a functional issue with your site's users. Moreover, the duplicate content rules also apply in this case. That's why we suggest that you enable on of the redirection settings of this option. The different settings are:

- Do not redirect. It does no redirection (turns this feature off)
- Redirect non-www to www. Requests to the non-www site will be redirected to the www site, e.g. `http://example.com` will be redirected to `http://www.example.com`.
- Redirect www to non-www. Requests to the www site will be redirected to the non-www site, e.g. `http://www.example.com` will be redirected to `http://example.com`.

Redirect this (old) domain name to the new one

Sometimes you have to migrate your site to a new domain, as we did migrating from joomlapack.net to akeebabackup.com. Usually this is done transparently, having both domains attached to the same site on the hosting level. However, while a visitor can access the old domain name, the address bar on his browser will still show the old domain name and search engines will believe that you have set up a duplicate content site, sending to the darkest hole of search engine results. Not good! So, you'd better redirect the old domain to the new domain with a 301 redirection to alert both users and search engines about the name change. This is what this option does. You can include several old domains separated by commas. For example:

```
joomlapack.net, www.joomlapack.net
```

will redirect all access attempts to joomlapack.net and www.joomlapack.net to the new domain.

HSTS Header (for HTTPS-only sites)

Assuming that you have a site which is only supposed to be accessed over HTTPS, your visitor's web browser has no idea that the site should not be ever accessed over HTTP. Joomla! offers a Global Configuration setting to force SSL throughout the entire site, but this is merely a workaround: if it sees a request coming through HTTP it will forward it to HTTPS. There are two privacy implications for your users:

- If you have not enabled the SSL option in Global Configuration a man-in-the-middle attack known as "SSL Stripping" is possible. In this case the user will access your site over plain HTTP without having any idea that they should be using HTTPS instead.
- Even if Joomla! forwards your user to HTTPS the unencrypted (HTTP) request can still be logged by an attacker. With a moderate amount of sophistication on the part of the attacker (basically, some $200 hardware an widely available information) they can efficiently eavesdrop *at the very least* the URLs visited by your user –undetected but to the most vigilant geeks among your users– and probably infer information about them.

The HSTS header can fix SSL Stripping attacks by instructing the browser to always use HTTPS for this website, even if the protocol used in a URL is HTTP. The browser, having seen this header, will always use HTTPS for your site. An SSL Stripping and other man-in-the-middle attacks are possible only if your user visits your site *for the first time* in a hostile environment. This is usually not the case, therefore the HSTS header can provide real benefits to the privacy of your users.

For more information on what the HSTS header is and how it can protect your site visitors' privacy you can read the Wikipedia entry on HSTS [http://en.wikipedia.org/wiki/HTTP_Strict_Transport_Security].

Disable HTTP methods TRACE and TRACK (protect against XST)

Enabling this option will prevent remote clients from using the HTTP methods TRACE and TRACK to connect to your site. These can be used by hackers to perform privilege escalation attacks known as Cross Site Tracing (XST) [https://www.owasp.org/index.php/Cross_Site_Tracing]. To the best of our knowledge there are no side-effects to enabling this feature.

Cross-Origin Resource Sharing (CORS)

By default a third party site cannot load content from your site using an AJAX request since your content is in a different domain than the site hosting the Javascript performing the request. Using CORS you can circumvent this problem, allowing third party sites' Javascript to load content from your site.

There are three settings for this option. **Explicitly disallowed** will tell browsers that you do not with your site's resources to be accessible from any other domain name whatsoever. **Let the browser decide (default)** will not set any headers and let the browser decide whether to allow access to your site from a different domain name; this may work a bit differently in older browsers which MIGHT allow subdomains of your site to have access. Use this option if you plan on setting up CORS headers yourself, either in custom .htaccess code or through server-side scripting e.g. as part of the response of a component. Finally, **Explicitly allowed** will tell browsers that you want your site's resources to be accessible for any other domain.

When you use any of the explicit options the appropriate Access-Control-Allow-Origin and Timing-Allow-Origin HTTP headers will be set for all requests. For more information on CORS please consult the Enable CORS [http://enable-cors.org/] site.

Reduce MIME type security risks

Internet Explorer 9 and later, as well as Google Chrome, will try by default to guess the content type of downloaded documents regardless of what the MIME header sent by the server. Let's say a malicious user to upload an executable file, e.g. a .EXE file or a Chrome Extension, under an innocent file extension as .jpg (image file). When a victim tries downloading this file, IE and Chrome will try to guess the file type, identify it as an executable file and under certain circumstances it executing it. This means that your site could be unwittingly used to serve malware. Such an event could result in your site being added to a list of known bad sites by browser makers and cause their browsers to display a warning to users when visiting your site. By enabling this feature you instruct IE and Chrome to respect the file type sent by your server, eliminating this issue. See the relevant MSDN article [https://msdn.microsoft.com/en-us/library/gg622941(v=vs.85).aspx] for more information.

Reflected XSS prevention

When enabled the browser will be instructed to prevent reflected XSS attacks. Reflected XSS attacks occur when the victim is manipulated into visiting a specially crafted URL which contains Javascript code in it. This URL leads to a vulnerable page which outputs this Javascript code verbatim in the page output ("reflects" the malicious code sent in the URL).

This is a commonly used method used by attackers to compromise web sites, especially when a zero-day XSS vulnerability is discovered in popular Joomla! extensions or Joomla! itself. The attacker will try to trick the administrators of websites into visiting a maliciously crafted link. If the victims are logged in to their site at that time the malicious Javascript will execute, typically giving the attacker privileged information or opening a back door to compromising the site.

Enabling this option in .htaccess Maker will instruct the browser to try preventing this issue. Please note that this only works on compatible browsers (IE8; Chrome; Safari and other WebKit browsers) and only applies to reflected XSS attacks. Stored XSS attacks, where the malicious

Javscript is stored in the database, is **NOT** prevented. You should consider this protection a safety belt. Not wearing a safety belt in the event of an accident pretty much guarantees serious injury or death. Wearing a safety belt minimises the possibility of injury or death but does not always prevent it. This option is your safety belt against the most common type of XSS attacks. You should use it but don't expect it to stop everything thrown your way. Always keep your software up-to-date, especially when a security release is published!

For more information please consult the relevant MSDN article [http://blogs.msdn.com/b/ie/archive/2008/07/02/ie8-security-part-iv-the-xss-filter.aspx].

Neutralise SVG script execution

Send a custom Content Security Policy HTTP header for SVG files which prevents scripts inside them from executing. Doing so will also disable most SVG animations and remove all interactive features from all SVG files.

This option only needs to be enabled if your site is configured in such a way that it allows untrusted users to upload unsanitized SVG files to your site. **By default, Joomla does NOT permit this**. You'd have to configure it to do so yourself, using the Media Manager's options page and / or a third party extension.

Note that unlike the Site Protection features, this will apply to all SVG files regardless of their location.

Warning

Because of the way NginX works, enabling this option removes all other custom HTTP headers for SVG files. This includes the HSTS header and the prevent content transformation header. This can cause unexpected security issues. For this reason we very strongly recommend AGAINST using this option on NginX servers.

Prevent content transformation

Enabling this feature instructs proxy servers and caches to not convert your content. For example, certain proxy servers (typically found in mobile networks, businesses and ISPs in congested areas) will attempt to scale and aggressively compress images, CSS and Javascript to save bandwidth. This can lead to several issues, from displayed images being a bit off to your site breaking down because the compressed CSS/JS introduced errors preventing the browser from parsing it correctly. With this feature enabled the cache and proxy servers will be instructed to not do that by setting an HTTP header. If they respect the HTTP header (they should, it's a web standard) such issues are prevented.

For more information please consult the formal web standard document RFC 2616, section 14.9.5 [https://tools.ietf.org/html/rfc2616#section-14.9.5]

Send ETag

Your web server sends an ETag header with each **static** file it serves. Browsers will ask the server in subsequent requests whether the file has a different ETag. If not, they will serve the same file therefore reducing the amount of data they need to transfer from the server (and making the site load faster). By default ETags are calculated based on the file size, last modified date and the inode number. The latter depends on the location of the file inside the filesystem of the server.

When you have a site hosted on a single server this is great. If your static files are, however, hosted on a server farm this may not be a good idea. The reason is that every static file is stored on different server and while the file size and last modified date might be the same the inode number will differ, therefore causing the browser to perform unnecessary file transfers. This is where this option comes in handy.

Important

Do NOT change this option if your site is hosted on just one server. If you are not sure or have no idea what that means then your site **is** hosted on just one server and you MUST NOT change this option. Please bear in mind that site speed analysers like YSlow are designed for gigantic sites running off *hundreds or thousands of servers*. Their site speed checklists DO NOT work well with the vast majority of sites you are working on, i.e. very small sites running off a single server. Treat these checklists as suggestions: you need to exercise common sense, not blindly follow them. If you disable ETags on a small site you are more likely to do harm than good!

The available options are:

- **Server default**. Use whatever setting the server administrator has chosen. If you are not perfectly sure you know what you're doing choose this option.
- **Full**. Send ETags based on file size, last modification date/time and inode number.
- **None (no ETag sent)**. Disable ETags completely. Do keep in mind that if you do not also enable the Set default expiration option you will be hurting your site's performance!

Note

The lack of other options is intentional and has to do with an NginX limitation. NginX, unlike Apache, only offers a binary switch for ETags: you either send them or you don't.

Referrer Policy Header

While surfing, your browser will send out some information about the previous you were visiting (the Referrer that brought you to the new page). This is useful for analytics, for example you can easily track down how many visitors came from Twitter or any other page.

However, there are security implications about the Referrer header. What if on the private area of your website there are sensible information? Think about a private support area, where there is a ticket with the link www.example.com/private-support/help-my-site-www-foobar-com-is-hacked ; you post a reply with a link to a Stack Overflow reply, the user clicks on it and... whops! Now Stack Overflow knows that the site www.foobar.com was hacked.

The Referrer Policy header will instruct your browser when to send the Referrer header and how many information you want to share.

- **Do not set any policy** You're not setting any instruction to the browser
- **(Empty)** You do not want to set the Referrer Policy here (as header) and the browser should fallback to other mechanisms, for example using the `<meta>` element or the `referrerpolicy` attribute on `<a>` and `<link>` elelements.
- **no-referrer** Never send the referer header
- **no-referrer-when-downgrade** The browser will not send the referrer header when navigating from HTTPS to HTTP, but will always send the full URL in the referrer header when navigating from HTTP to any origin. It doesn't matter whether the source and destination are the same site or not, only the scheme.

Source	Destination	Referrer
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
http://www.yoursite.com/url1	http://www.yoursite.com/url2	http://www.yoursite.com/url1
http://www.yoursite.com/url1	http://www.example.com	http://www.yoursite.com/url1
http://www.yoursite.com/url1	https://www.example.com	http://www.yoursite.com/url1
https://www.yoursite.com/url1	http://www.example.com	NULL

- **same-origin** The browser will only set the referrer header on requests to the same origin. If the destination is another origin then no referrer information will be sent.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL
https://www.yoursite.com/url1	https://www.example.com	NULL

- **origin** The browser will always set the referrer header to the origin from which the request was made. This will strip any path information from the referrer information.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.example.com	https://www.yoursite.com/

Warning

Navigating from HTTPS to HTTP will disclose the secure origin in the HTTP request.

- **strict-origin** This value is similar to `origin` above but will not allow the secure origin to be sent on a HTTP request, only HTTPS.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/

Source	Destination	Referrer
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL
http://www.yoursite.com/url1	https://www.yoursite.com/url2	http://www.yoursite.com/
http://www.yoursite.com/url1	http://www.yoursite.com/url2	http://www.yoursite.com/
http://www.yoursite.com/url1	http://www.example.com	http://www.yoursite.com/

- **origin-when-cross-origin** The browser will send the full URL to requests to the same origin but only send the origin when requests are cross-origin.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	https://www.example.com	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.example.com	https://www.yoursite.com/
http://www.yoursite.com/url1	https://www.yoursite.com/url2	http://www.yoursite.com/

Warning

Navigating from HTTPS to HTTP will disclose the secure URL or origin in the HTTP request.

- **strict-origin-when-cross-origin** Similar to `origin-when-cross-origin` above but will not allow any information to be sent when a scheme downgrade happens (the user is navigating from HTTPS to HTTP).

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	https://www.example.com	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL

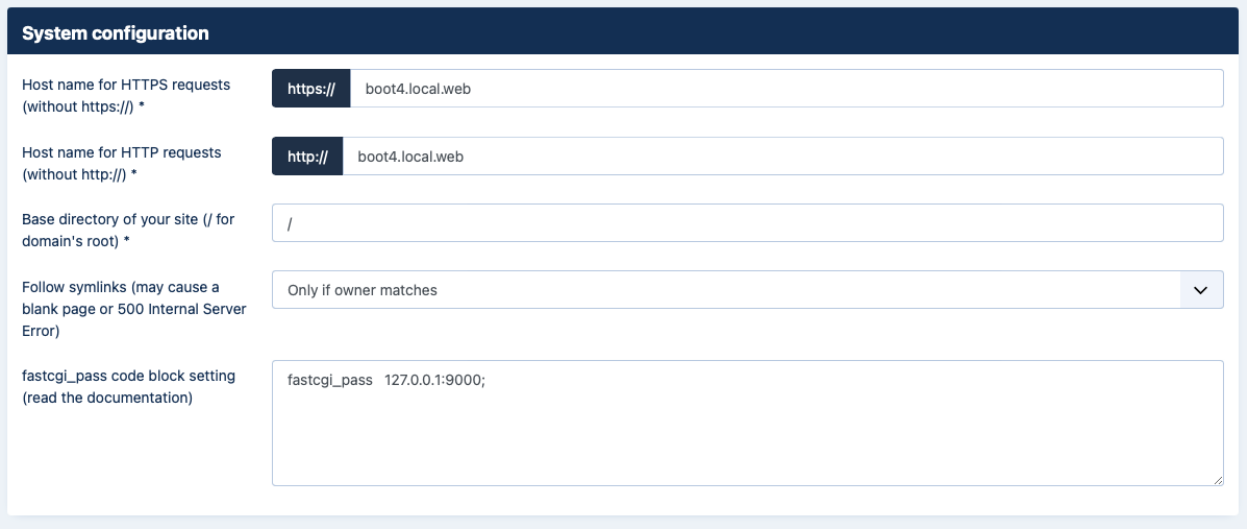
- **unsafe-url** The browser will always send the full URL with any request to any origin.

7.5. System configuration

The host name options are used for the HSTS, Redirect www and non-www addresses and Redirect this (old) domain name to the new one features of the .htaccess Maker. The base directory option is used even when all of the .htaccess Maker options are disabled; it's used for the Joomla SEF URL block which cannot be disabled.

As a result, if you transfer your site on a new host you MUST change these configuration parameters to reflect your new server configuration. Do note that this will not happen automatically, even if you are using Akeeba Backup to transfer the site. In fact, you must remove your .htaccess file, change this parameters and then let Admin Tools create a new .htaccess file before you can use your site's front-end.

System configuration



This final section contains all the options which let the NginX Configuration Maker know some of the most basic information pertaining your site and which are used to create the rules for some of the options in the previous section.

Host name for HTTPS requests (without https://)
: Enter the site's domain name for secure (HTTPS) connections. By default, Admin Tools assumes it is the same as your site's domain, but you have to verify it as it may be different on some hosts, especially on shared hosts. Do not use the https:// prefix, just the domain name and path to your site. For example, if the address is `https://www.example.com/joomla` then type in `www.example.com/joomla`.

Host name for HTTP requests (without http://)
: Enter the site's domain name for regular (HTTP) connections. By default, Admin Tools assumes it is the same as the address you are connected to right now, but you have to verify it. Do not use the http:// prefix, just the domain name and path to your site. For example, if the address to your site's root is `http://www.example.com/joomla` then type in `www.example.com/joomla`.

Follow Symlinks
: Joomla! normally does not create symlinks and does not need symlinks. At the same time, hackers who have infiltrated a site do use symlinks to get read access to files that are normally outside the reach of the web site they have hacked. This is why this option exists. You can set it to:

  - **Default**. It's up to your host to determine if symlinks will be followed. Use this if the other options cause problems to your site.
  - **Yes, always**. This is the insecure option. If you use it keep in mind that in the event of a hack all world-readable files on the server may be compromised. Really, it's a BAD idea. Worse than bad, it's a horrible idea. Don't use it.

- **Only if owner matches**. That's the safe approach to enabling symlinks. They will be followed only if the owner of the symlink matches the owner of the file/directory it links to.

If you have no idea what that means, first try setting this option to "Only if owner matches". If this results in a blank page or an Internal Server Error 500 then set this to "Default". For more information please consult Apache's documentation or Joomla!'s htaccess.txt file.

Base directory of your site

This is the directory where your site is installed. For example, if it is installed in a directory named `joomla` and you access it on a URL similar to `http://www.example.com/joomla` you have to type in `/joomla` in here. If your site is installed on the root of your domain, please use a single forward slash for this field: `/`

fastcgi_pass code block setting (read the documentation)

Please enter the value of the fastcgi_pass code block required by your server setup to execute PHP files, i.e. a fastcg_pass to the listening FastCGI Process Manager of PHP. This is usually `fastcgi_pass 127.0.0.1:9000;` on most servers. If you are not sure ask your host or, if you are your own host, examine the configuration files of NginX. You will probably see a block like this:

```
location ~ .php$ {
    try_files $uri =404;
    fastcgi_pass   127.0.0.1:9000;
    fastcgi_index  index.php;
    include        /Applications/MNPP/conf/nginx/fastcgi_params;
}
```

The value you are looking for is everything between the two curly braces. In the example above:

```
try_files $uri =404;
fastcgi_pass   127.0.0.1:9000;
fastcgi_index  index.php;
include        /Applications/MNPP/conf/nginx/fastcgi_params;
```

Important

For security reasons the bare minimum you should use is something like:

```
try_files $uri =404;
fastcgi_split_path_info ^(.+\.php)(/.+)$;
fastcgi_pass   127.0.0.1:9000;
```

The first two lines **are extremely important**. They protect you against a well-documented arbitrary code execution vulnerability [https://nealpoole.com/blog/2011/04/setting-up-php-fastcgi-and-nginx-dont-trust-the-tutorials-check-your-configuration/].

8. The web.config maker

Note

This feature is only available in the Professional release

Warning

This feature is only available on servers running the Microsoft IIS web server. If your server is using Apache or NginX the button to launch this feature will not be shown. If the server type cannot be detected you will see this feature but you should consult with your host whether it will have any effect on your server.

One of the most important aspects of managing a web site hosted on an IIS server is being able to fine-tune your site configuration file, web.config. This file is responsible for many web server level tweaks, such as enabling the use of search engine friendly (SEF) URLs, blocking access to system files which should not be accessible from the web, redirecting between pages based on custom criteria and even optimising the performance of your site. On the downside, learning how to tweak all those settings is akin to learning a foreign language. The web.config Maker tool of Admin Tools is designed to help you create such a file with a user-friendly interface.

Tip

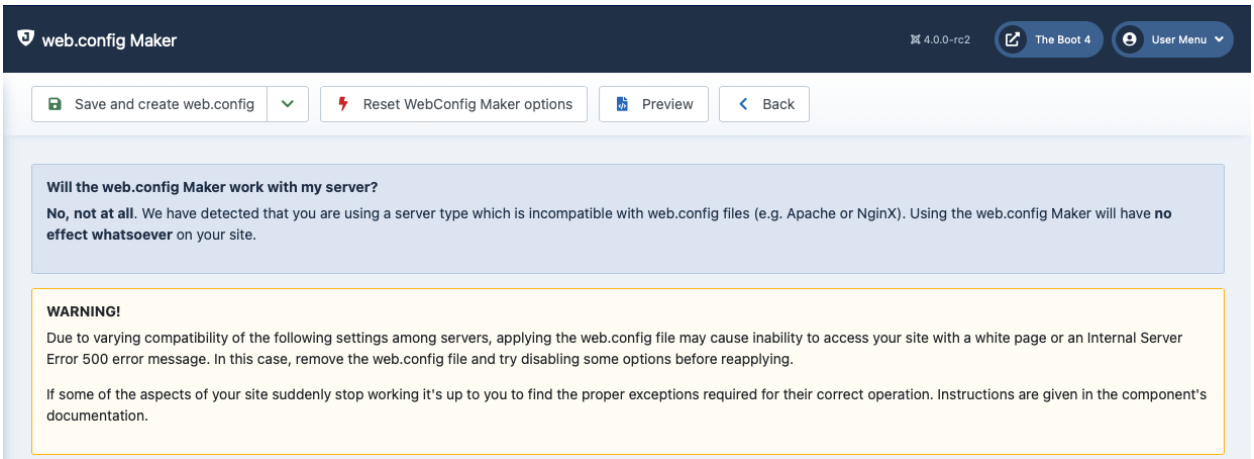
If you ever want to revert to a "safe default", just set all of the options on this page to "Off" and click on "Save and create web.config". This will create a web.config file that's practically the same as the web.config.txt file shipped with Joomla! itself without any of the optional sections.

This feature relies on Microsoft's URL Rewrite 2.0 module for Microsoft IIS. This is the same optional IIS module required by the web.config shipped with Joomla! to use SEF URLs without index.php in them. If you cannot use Joomla!'s web.config after renaming the web.config.txt file to web.config then you will NOT be able to use our web.config Maker feature. If this is the case please contact your host and ask them to install and enable the URL Rewrite 2.0 module for IIS.

Please keep in mind that for this exact reason this feature, like Joomla!'s SEF URLs, require IIS 7 or later. If you have an older version of IIS such as IIS 6 you will NOT be able to use this feature. Unfortunately IIS 6 and lower lack the necessary features to create a security tightening web.config file. Also note that IIS 6 is End of Life and should not be used on a live site.

The top part of the web.config maker page contains the standard toolbar buttons you'd expect:

The web.config Maker's toolbar



- Save and create web.config saves the changes you have made in this page's options and creates a `web.config` file.is the logical next step to the previous button. If you already had a `web.config` file on your site, it will be renamed to `web.config.admintools` before the new file is written to disk.
- Save without creating web.config saves the changes you have made in this page's options without actually creating a `web.config` file. This should be used when you have not decided on some options yet, or if you want to preview the generated `web.config` file before writing it to disk.

- Reset WebConfig Maker options will reset the options on this page to their default values. Use this when you believe you have messed up the configuration too much and need to start over.

- Preview pops up a dialog where you can see how the generated `web.config` file will look like without writing it to disk. This dialog shows the saved configuration. If you have modified any settings they will not be reflected in there until you click either of the previous two buttons.

- The Back button takes you back to the Control Panel page.

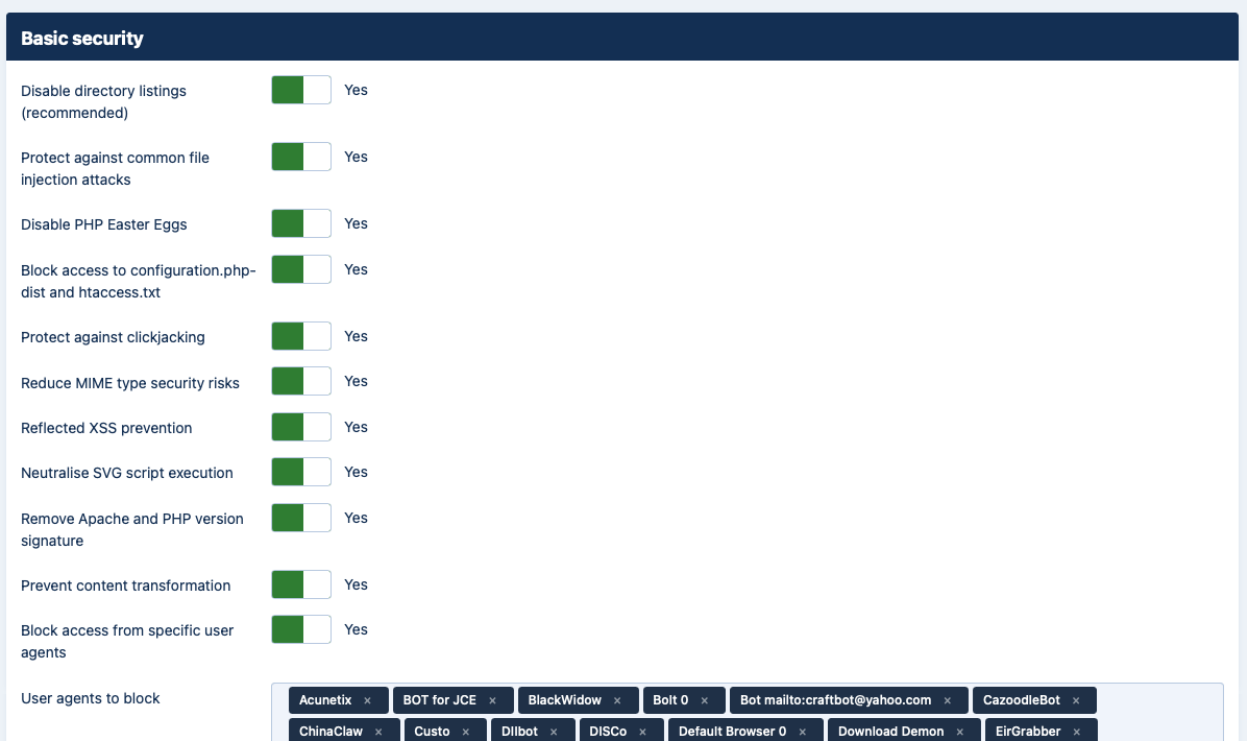
Below the toolbar there are several panes with different options, described below.

Depending on your web server settings, some of these options may be incompatible with your site. In this case you will get a blank page or an Internal Server Error 500 error page when trying to access any part of your site. If this happens, you have to remove the contents of `web.config` file from your site's root directory using an FTP application or the File Manager feature of your hosting control panel.

We strongly suggest that you begin by setting all options to No and then enable them one by one, creating a new configuration after you have enabled each one of them. If you bump into a blank or error page you will know that the last option you tried is incompatible with your host. Unfortunately, there is no other way than trial and error to deduce which options may be incompatible with your server.

8.1. Basic Security

Basic security



Disable directory listings (recommended)

When disabled, your web server might list the files and subdirectories of any directory on your site if there is no index.html file inside it. This can pose a security risk, so you should always enable this option to avoid this from happening.

Protect against common file injection attacks

Many attackers try to exploit vulnerable extensions on your site by tricking them into including malicious code hosted on the attacker's server. Enabling this option will protect your server against this kind of attacks. This works by preventing any URL which references an http:// or https:// URL in the query string. Sometimes these are legitimate requests. For example, some gallery components use them. In this case you are recommended to use the RFIShield (Remote File Inclusion protection) in the Web Application Firewall and turn this web.config Maker option OFF.

Disable PHP Easter Eggs

PHP has a fun and annoying feature known as "Easter Eggs". By passing a special URL parameter, PHP will display a picture instead of the actual page requested. Whereas this is considered fun, it is also widely exploited by attackers to figure out the version of your PHP installation (these images change between different versions of PHP) and launch hacking attacks targeting your specific PHP version. By enabling this option you completely disable access to those Easter Eggs and make it even more difficult for attackers to figure out the details of your server.

Note: You are advised to also set *expose_php* to `Off` in your `php.ini` file to prevent accidental leaks of your PHP version.

Block access to configuration.php-dist and htaccess.txt

These two files are left behind after any Joomla! installation or upgrade and can be directly accessed from the web. They are used by attackers to tell the Joomla! version you are using, so that they can tailor an attack targeting your specific Joomla! version. Enabling this option will "hide" those files when accessed from the web (a 404 Not Found page is returned), tricking attackers into believing that these files do not exist and making it slightly more difficult for them to deduce information about your site. This option also hides the web.config.txt file included in Joomla! 3 and later for use with the IIS server.

Protect against clickjacking

Turning on this option will protect you against clickjacking [http://en.wikipedia.org/wiki/Clickjacking]. It does so by preventing your site's pages to be loaded in a, Frame, IFrame or Object tag unless this comes from a page inside your own site. Please note that if your site relies on its pages being accessible through frames / iframes displayed on other sites (NOT on your site displaying content from other sites, that's irrelevant!) then you should not enable this option. If unsure, enable it.

Reduce MIME type security risks

Internet Explorer 9 and later, as well as Google Chrome, will try by default to guess the content type of downloaded documents regardless of what the MIME header sent by the server. Let's say a malicious user to upload an executable file, e.g. a .EXE file or a Chrome Extension, under an innocent file extension as .jpg (image file). When a victim tries downloading this file, IE and Chrome will try to guess the file type, identify it as an executable file and under certain circumstances it executing it. This means that your site could be unwittingly used to serve malware. Such an event could result in your site being added to a list of known bad sites by browser makers and cause their browsers to display a warning to users when visiting your site. By enabling this feature you instruct IE and Chrome to respect the file type sent by your server, eliminating this issue. See the relevant MSDN article [https://msdn.microsoft.com/en-us/library/gg622941(v=vs.85).aspx] for more information.

Reflected XSS prevention

When enabled the browser will be instructed to prevent reflected XSS attacks. Reflected XSS attacks occur when the victim is manipulated into visiting a specially crafted URL which contains Javascript code in it. This URL leads to a vulnerable page which outputs this Javascript code verbatim in the page output ("reflects" the malicious code sent in the URL).

This is a commonly used method used by attackers to compromise web sites, especially when a zero-day XSS vulnerability is discovered in popular Joomla! extensions or Joomla! itself. The attacker will try to trick the administrators of websites into visiting a maliciously crafted link. If the victims are logged in to their site at that time the malicious Javascript will execute, typically giving the attacker privileged information or opening a back door to compromising the site.

Enabling this option in .htaccess Maker will instruct the browser to try preventing this issue. Please note that this only works on compatible browsers (IE8; Chrome; Safari and other WebKit browsers) and only applies to reflected XSS attacks. Stored XSS attacks, where the malicious Javscript is stored in the database, is **NOT** prevented. You should consider this protection a safety belt. Not wearing a safety belt in the event of an accident pretty much guarantees serious injury or death. Wearing a safety belt minimises the possibility of injury or death but does not always prevent it. This option is your safety belt against the most common type of XSS attacks. You should use it but don't expect it to stop everything thrown your way. Always keep your software up-to-date, especially when a security release is published!

For more information please consult the relevant MSDN article [http://blogs.msdn.com/b/ie/archive/2008/07/02/ie8-security-part-iv-the-xss-filter.aspx].

Neutralise SVG script execution

Send a custom Content Security Policy HTTP header for SVG files which prevents scripts inside them from executing. Doing so will also disable most SVG animations and remove all interactive features from all SVG files.

This option only needs to be enabled if your site is configured in such a way that it allows untrusted users to upload unsanitized SVG files to your site. **By default, Joomla does NOT permit this**. You'd have to configure it to do so yourself, using the Media Manager's options page and / or a third party extension.

Note that unlike the Site Protection features, this will apply to all SVG files regardless of their location.

Remove web server and PHP version signature

By default IIS and PHP will output HTTP headers advertising their existence and their version numbers. If you are always using the latest and greatest versions this may not be a problem, but the chances are that your host is using an older version of both software. Giving away the version numbers of the server software in every request makes it trivial for an attacker to obtain information about your site which will help them to launch a tailored attack, targeting known security issues in the versions of IIS and PHP you're using. Enabling this option will mitigate this issue. Please note that this is SECURITY THROUGH OBSCURITY which is NEVER, EVER an adequate means of protection. It's just a speed bump in the way of an attacker, not a roadblock.

You are strongly advised to keep your server software up-to-date. If you're not managing your own server, e.g. you're using a shared host, we very strongly recommend choosing a hosting service which follows this rule. As a simple test, if your server is not currently using one of the PHP versions published in the top right corner of http://php.net (or at most one version earlier, i.e. the third number of the version on your server is one less than the one listed on php.net) the chances are that your server is using outdated, vulnerable server software. Remember that outdated versions of PHP and IIS, even with *some* security patches backported, CAN NOT be secure. There's a good reason new software versions are published regularly.

Prevent content transformation

Enabling this feature instructs proxy servers and caches to not convert your content. For example, certain proxy servers (typically found in mobile networks, businesses and ISPs in congested areas) will attempt to scale and aggressively compress images, CSS and Javascript to save bandwidth. This can lead to several issues, from displayed images being a bit off to your site breaking down because the compressed CSS/JS introduced errors preventing the browser from parsing it correctly. With this feature enabled the cache and proxy servers will be instructed to not do that by setting an HTTP header. If they respect the HTTP header (they should, it's a web standard) such issues are prevented.

For more information please consult the formal web standard document RFC 2616, section 14.9.5 [https://tools.ietf.org/html/rfc2616#section-14.9.5]

Block access from specific user agents
: When enabled, it will block any site access attempt if the remote program sends one of the user agent strings in the User agents to block option. This feature is designed to protect your site against common bandwidth-hogging download bots and otherwise legitimate tools which are more usually used for hacking sites than their benign intended functionality.

User agents to block
: The user agent strings to block from accessing your site. You don't have to enter the whole UA string, just a part of it. The default setting includes several usual suspects.

  You can type new entries by clicking at the end of the list, type the entry and press ENTER to accept it. Delete items using the X button next to each entry.

  Do note that some server with mod_security or mod_evasive installed will throw an "Access forbidden" message if you try to save the configuration settings when this field contains the word "WGet". If you come across this issue it is not a bug with Admin Tools or Joomla!, it is a server-level protection feature kicking in. Just avoid including the word Wget and you should be out of harm's way.

8.2. Server protection

Server protection (partial screenshot)

This feature is based on the principle of ‘nothing runs on my site unless I explicitly allow it’ a.k.a. ‘deny-first’. This is a great policy which puts you in total control of your site, greatly reducing your attack surface area.

By blocking access to front-end and back-end elements (media files, Javascript, CSS and PHP files) it makes it extremely hard —but not outright impossible— for an attacker to hack your site, even if he manages to exploit a security vulnerability to upload malicious PHP code to your site. Additionally, it will deny direct access to resources not designed to be directly accessible from the web, such as translation INI files, which are usually used by attackers to find out which version of Joomla and its extensions you are running on your site to tailor an attack to your site.

On the downside, you have to explicitly enable access to some extensions' PHP files which are designed to be called directly from the web and not through Joomla!'s main file, `index.php`.

Do note that enabling this feature will kill the functionality of some extensions which create arbitrarily named PHP files throughout your site. In our humble opinion the security risk of having your site unprotected greatly outweighs the benefits of such extensions. As a result, we strongly suggest disabling these extensions.

There are three sections of configuration settings controlling the functionality of the Server Protection feature. In short, you have controls for protecting the backend of your site (everything under the administrator directory), the frontend of the site (everything NOT under the administrator directory) and exceptions to these rules.

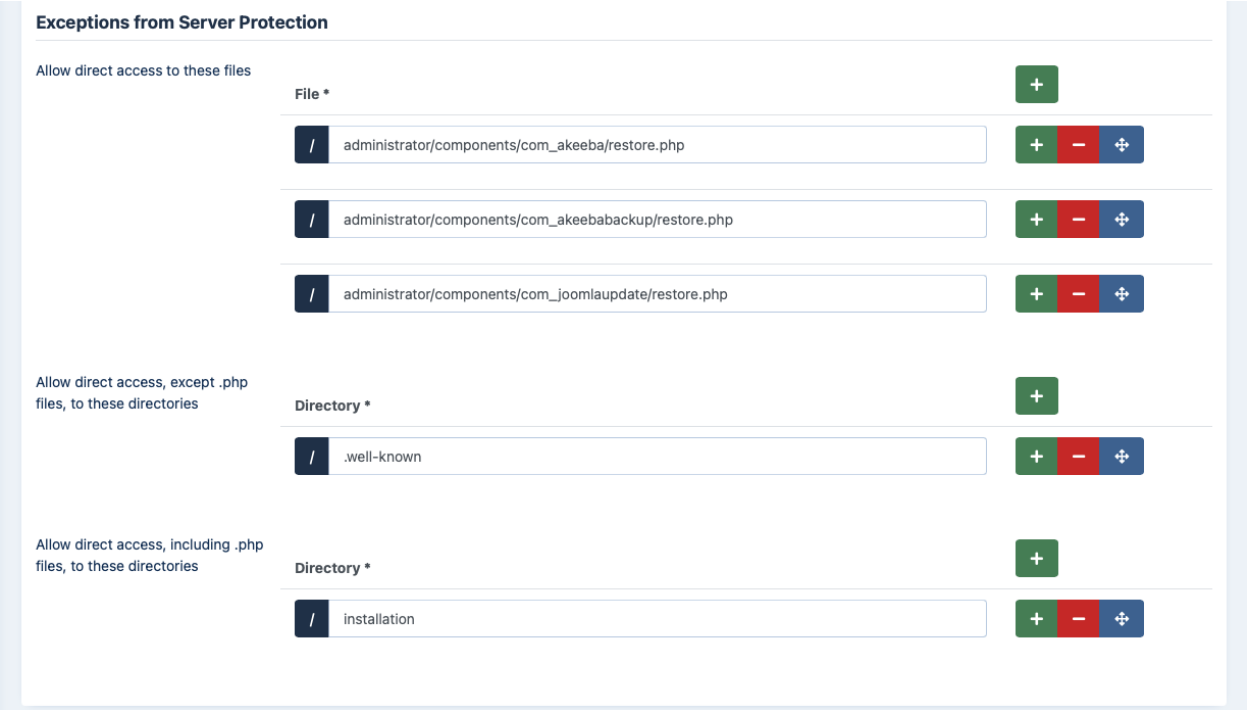
Starting with the backend section we see the following options:

Back-end protection	Disables direct access to most back-end resources, except those in the exceptions lists. It is generally recommended to turn it on to enhance the protection of your site.
Back-end directories where file type exceptions are allowed	This is a list of back-end directories (that is, subdirectories of your site's administrator directory) where you expect media files to be present. Place one directory on each line. Subdirectories of those directories are automatically added to the exceptions list without having to explicitly list them here. You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You must not type the administrator/ prefix. As you can see, it's already added for you and can't be removed. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.
Back-end file types allowed in selected directories	The extensions of back-end files which allowed to pass through the server protection filter, as long as the files with those extensions are in the list above. Do not type the leading dot for each file extension. Add file extensions by clicking at the end of the list, typing the extension and pressing ENTER. Delete file extensions by pressing the X next to them. Extensions are case–insensitive as of 7.0.6; this means that entering pdf will also match the extensions PDF and Pdf. The convention is to type in the extensions in lowercase. Regardless of the case–insensitivity of Admin Tools, it is a good idea to have the *extensions* of the files you upload in lowercase to avoid issues with third party extensions, Joomla itself and software running on case–sensitive–aware Operating Systems such as Linux.

Next up, we have the front-end section:

Front-end protection	Disables direct access to most front-end resources, except those in the exceptions lists. It is generally recommended to turn it on to enhance the protection of your site. Enabling this feature will prevent web access to all folders in your site's root, not just Joomla's folders (such as components). If you need to enable direct access to a folder you will need to place it in one of the *front-end* directory exception lists in the Fine-tuning or Exceptions section.
Front-end directories where file type exceptions are allowed	This is a list of front-end directories (that is, directories in your site's root) where you expect media files to be present. Place one directory on each line. Subdirectories of those directories are automatically added to the exceptions list without having to explicitly list them here. You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You must not type the administrator/ prefix. As you can see, it's already added for you and can't be removed. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows. Use this to allow access to specific types static media files inside specific directories. This is the least permissive exception to front-end blocking. Use this for folders which have a mix of public and private content, as long as the private content is NOT of an allowed file type (see below).
Front-end file types allowed in selected directories	The extensions of front-end files which allowed to pass through the server protection filter, as long as the files with those extensions are in the list above. The same controls and rules as “Back-end file types allowed in selected directories” apply.

Exceptions



Finally, we have the Exceptions section. This allows specific files or all files in specific directories to pass through the Server Protection filter without further questions. This may be required for several reasons.

For starters, some extensions need to directly access PHP files, without passing them through Joomla!'s main files. One such example is Akeeba Backup Professional's `restore.php` used in the integrated restoration feature, as it would be impossible to use the index.php of a site which is in a state of flux while the restoration is underway.

Other examples are CSS and Javascript minifiers, either included in your template or installed in your site. Forum extensions are also part of the same problem, as they tend to create a dedicated directory for their attachments, avatar icons and so forth. Moreover, some extensions place PHP files inside your site's `tmp` and `cache` directories and expect them to be directly accessible from the web. While this is a frowned upon behaviour, contrary to the design goals of Joomla! itself, you still need a way to work around them and we have to provide it. Finally, you may have a third party script which doesn't install as a Joomla! extension. The Server Protection feature would normally block access to it and you still need a way around this limitation. So here we have those workarounds:

Allow direct access to these files

Place one file per line which should be exempt from filtering, therefore accessible directly from the web. The default settings include Akeeba Backup Professional and, of course, Admin Tools itself.

Please remember that you are entering the **file path** relative to your site's root, not a URL. If you want to allow the URL `http://www.example.com/mysite/components/com_example/foobar.php?test=1&whatever=2` and your site is hosted at `http://www.example.com/mysite` you need to enter `components/com_example/foobar.php` here. Here's how we figured this out. Start by removing the question mark from the URL and everything that's to its right. Then, remove the site's root URL from the left part of the remaining URL. Finally, remove the leading forward slash — as you can see, it's already included for you and you can't remove it.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows

pointing North, South, East and West. Please note that the path separator is the forward slash (/), even on Windows.

Allow direct access, except .php files, to these directories

Direct access to all files (except for .php files) will be granted if they are inside any of the directories in this list AND their subdirectories. Normally you should only need to add your forum's attachments, avatars and image galleries directories, or other directories where you only intend to store media files. As with all similar options, add one directory per line, without a leading or trailing slash.

This is a middle ground in front-end blocking. You should use this only for folders which have only public content, i.e. if it's in that folder you are OK with it being shared with the rest of the world.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows pointing North, South, East and West. You do not need to type a trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

Allow direct access, including .php files, to these directories

This option should be used sparingly as possible. Each and every directory placed in this list is no longer protected by Server Protection AT ALL and can be potentially used as an entry point to hacking your site. To be clear, if an attacker uploads a malicious file in one of these directories by exploiting a vulnerability which allows them to upload predictably named files in predictably named folders they will be able to access it over the web. This is how sites get hacked. As far as we know there are only three cases when its use is even marginally justifiable:

- If you have installed another Joomla!, WordPress, or any other PHP application in a subdirectory of your site. For example, if you are trying to restore a copy of your site inside a directory named `test` in your site's root you have to add `test` to this list. This is the one and only usage scenario which doesn't compromise your site's security.
- Some templates and template frameworks may wrap their CSS and Javascript inside PHP files in order to deliver them compressed to your browser. While this is a valid technique, it's possible that the list of PHP files is too big to track down and include in the first list of the Exceptions section. In this case you may consider putting the template subdirectory containing those files in this list.
- Some extensions do something silly: they place files inside your site's `tmp` or `cache` directories and expect them to be directly accessible from the web. This is plain wrong because these directories are designed to be protected system directories where direct access should not be allowed, most notably because they might contain sensitive information. However, if you have such extensions you need a way to allow direct access to those directories.

  If you decide that convenience is better than security we can't stop you. Add tmp and cache to this list and wish for the best. You are opening a security hole on your site and you do it at your own risk and potential peril.

It's best to use the Allow direct access to these files feature if possible, allowing access only to very specific .php files.

Remember that an attacker who has found an upload vulnerability on your site can upload a malicious script inside one of these folders and use it to hack you. These folders are totally unprotected. That's why we very strongly advise against using this feature unless it's absolutely necessary - keeping in mind that you are, at the same time, leaving a hole in your security defences.

You can add more lines using the + buttons. You can remove a line using the - button. You can rearrange the order of the lines by clicking and dragging the button that looks like four arrows

pointing North, South, East and West. You do not need to type a leading or trailing forward slash. Please note that the path separator is the forward slash (/), even on Windows.

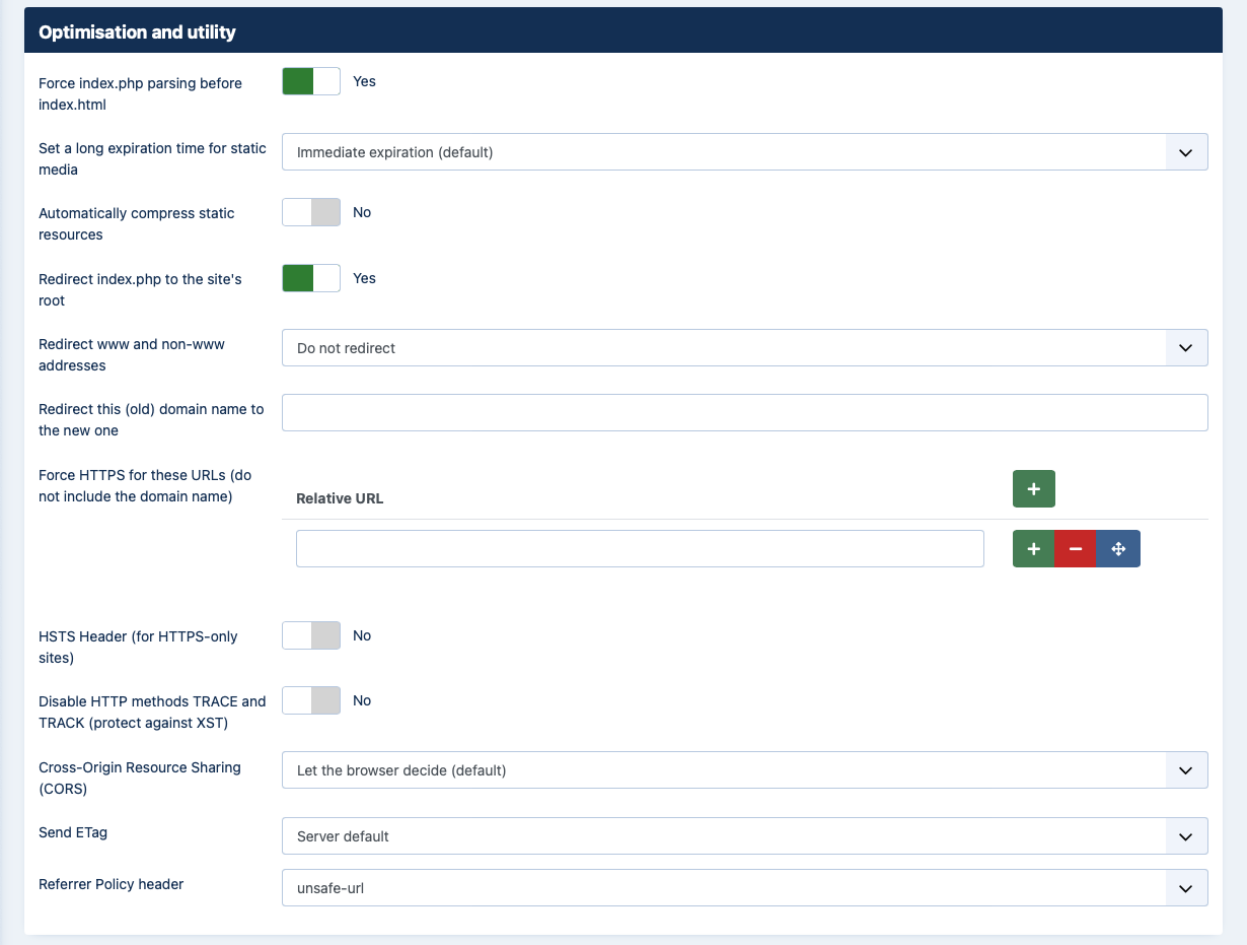
In order to figure out which custom exceptions you need to add on your site, take a look at the How to determine which exceptions are required section.

8.2.1. How to determine which exceptions are required

Please refer to the section on determining exceptions under the .htaccess Maker documentation. The exact same process applies. The only difference is that you enter the exceptions in the web.config Maker instead of the .htaccess Maker.

8.3. Optimisation and utility

Optimisation and utility



This section contains directives which are of utilitarian value and bound to save you some time:

Force index.php parsing before index.html

Some servers attempt to serve index.html before index.php. This has the implication that trying to access your site's root, e.g. `http://www.example.com`, will attempt to serve an index.html first. If this file doesn't exist, it will try to serve index.php. However, all of our Joomla! sites only have the index.php, so this checking slows them down unnecessarily on each page request. This rule works around this problem. Do note that some servers do not allow this and will result in a blank page or Internal Server Error page.

Set a long expiration time for static media

Enabling this option will cause all files and pages served from the site to have an expiration time between 1 week or 1 month (depending from the media), which means that the browser will not try to load them over the network until that time has passed. This is a very desirable feature, as it speeds up your site.

Automatically compress static resources

Enabling this option instructs the server to send plain text, HTML, XML, CSS, XHTML, RSS and Javascript pages and files to the browser after compressing them with GZip. This significantly reduces the amount of data transferred and speeds up the site. On the downside some very old browsers, like Internet Explorer 6, might have trouble loading the site. We do add a directive which instructs NginX to not compress the output when accessed by IE6 but all bets are off with a browser that hasn't been updated for over a decade...

Redirect index.php to the site's root

Normally, accessing your site as `http://www.example.com` and `http://www.example.com/index.php` will result in the same page being loaded. Except for the cosmetic issue of this behaviour it may also be bad for search engine optimization as search engines understand this as two different pages with the same content ("duplicate content"). Enabling this option will redirect requests to index.php, without additional parameter, to your site's root overriding this issue.

Redirect www and non-www adresses

Most web servers are designed to treat www and non-www URLs in the same way. For example, if your site is `http://www.example.com` then most servers will also display it if called as `http://example.com`. This has many adverse effects. For starters, if a user accesses the www site, logs in and then visits the non-www site he's no longer logged in, causing a functional issue with your site's users. Moreover, the duplicate content rules also apply in this case. That's why we suggest that you enable on of the redirection settings of this option. The different settings are:

- Do not redirect. It does no redirection (turns this feature off)
- Redirect non-www to www. Requests to the non-www site will be redirected to the www site, e.g. `http://example.com` will be redirected to `http://www.example.com`.
- Redirect www to non-www. Requests to the www site will be redirected to the non-www site, e.g. `http://www.example.com` will be redirected to `http://example.com`.

Redirect this (old) domain name to the new one

Sometimes you have to migrate your site to a new domain, as we did migrating from joomlapack.net to akeebabackup.com. Usually this is done transparently, having both domains attached to the same site on the hosting level. However, while a visitor can access the old domain name, the address bar on his browser will still show the old domain name and search engines will believe that you have set up a duplicate content site, sending to the darkest hole of search engine results. Not good! So, you'd better redirect the old domain to the new domain with a 301 redirection to alert both users and search engines about the name change. This is what this option does. You can include several old domains separated by commas. For example:

```
joomlapack.net, www.joomlapack.net
```

will redirect all access attempts to joomlapack.net and www.joomlapack.net to the new domain.

Force HTTPS for these URLs (do not include the domain name)

Under regular circumstances Joomla! should be able to automatically redirect certain menu items to a secure (HTTPS) address. However, this is not possible if the HTTPS domain name and the HTTP domain name are not the same, as is casual with many shared hosts. Since Admin Tools supports custom HTTPS domain names you can use this feature to make up for the lack of functionality in Joomla! itself. Use one URL per line and do not include http:// and your domain name. For example, if you want to redirect `http://www.example.com/eshop.html` to `https://www.example.com/eshop.html` you have to enter `eshop.html` in a new line of this field. Easy, isn't it?

HSTS Header (for HTTP-only sites)

Assuming that you have a site which is only supposed to be accessed over HTTPS, your visitor's web browser has no idea that the site should not be ever accessed over HTTP. Joomla! offers a Global Configuration setting to force SSL throughout the entire site, but this is merely a workaround: if it sees a request coming through HTTP it will forward it to HTTPS. There are two privacy implications for your users:

- If you have not enabled the SSL option in Global Configuration a man-in-the-middle attack known as "SSL Stripping" is possible. In this case the user will access your site over plain HTTP without having any idea that they should be using HTTPS instead.
- Even if Joomla! forwards your user to HTTPS the unencrypted (HTTP) request can still be logged by an attacker. With a moderate amount of sophistication on the part of the attacker (basically, some $200 hardware an widely available information) they can efficiently eavesdrop *at the very least* the URLs visited by your user –undetected but to the most vigilant geeks among your users– and probably infer information about them.

The HSTS header can fix SSL Stripping attacks by instructing the browser to always use HTTPS for this website, even if the protocol used in a URL is HTTP. The browser, having seen this header, will always use HTTPS for your site. An SSL Stripping and other man-in-the-middle attacks are possible only if your user visits your site *for the first time* in a hostile environment. This is usually not the case, therefore the HSTS header can provide real benefits to the privacy of your users.

For more information on what the HSTS header is and how it can protect your site visitors' privacy you can read the Wikipedia entry on HSTS [http://en.wikipedia.org/wiki/HTTP_Strict_Transport_Security].

Disable HTTP methods TRACE and TRACK (protect against XST)

Enabling this option will prevent remote clients from using the HTTP methods TRACE and TRACK to connect to your site. These can be used by hackers to perform privilege escalation attacks known as Cross Site Tracing (XST) [https://www.owasp.org/index.php/Cross_Site_Tracing]. To the best of our knowledge there are no side-effects to enabling this feature.

Cross-Origin Resource Sharing (CORS)

By default a third party site cannot load content from your site using an AJAX request since your content is in a different domain than the site hosting the Javascript performing the request. Using CORS you can circumvent this problem, allowing third party sites' Javascript to load content from your site.

There are three settings for this option. **Explicitly disallowed** will tell browsers that you do not with your site's resources to be accessible from any other domain name whatsoever. **Let the browser decide (default)** will not set any headers and let the browser decide whether to allow access to your site from a different domain name; this may work a bit differently in older browsers which MIGHT allow subdomains of your site to have access. Use this option if you plan on setting up CORS headers yourself, either in custom .htaccess code or through server-side scripting e.g. as part of the response of a component. Finally, **Explicitly allowed** will tell browsers that you want your site's resources to be accessible for any other domain.

When you use any of the explicit options the appropriate Access-Control-Allow-Origin and Timing-Allow-Origin HTTP headers will be set for all requests. For more information on CORS please consult the Enable CORS [http://enable-cors.org/] site.

Send ETag

Your web server sends an ETag header with each **static** file it serves. Browsers will ask the server in subsequent requests whether the file has a different ETag. If not, they will serve the same file therefore reducing the amount of data they need to transfer from the server (and making the site load faster). By default ETags are calculated based on the file size, last modified date and the inode number. The latter depends on the location of the file inside the filesystem of the server.

When you have a site hosted on a single server this is great. If your static files are, however, hosted on a server farm this may not be a good idea. The reason is that every static file is stored on different server and while the file size and last modified date might be the same the inode number will differ, therefore causing the browser to perform unnecessary file transfers. This is where this option comes in handy.

Important

Do NOT change this option if your site is hosted on just one server. If you are not sure or have no idea what that means then your site **is** hosted on just one server and you MUST NOT change this option. Please bear in mind that site speed analysers like YSlow are designed for gigantic sites running off *hundreds or thousands of servers*. Their site speed checklists DO NOT work well with the vast majority of sites you are working on, i.e. very small sites running off a single server. Treat these checklists as suggestions: you need to exercise common sense, not blindly follow them. If you disable ETags on a small site you are more likely to do harm than good!

The available options are:

- **Server default**. Use whatever setting the server administrator has chosen. If you are not perfectly sure you know what you're doing choose this option.
- **None (no ETag sent)**. Disable ETags completely. Do keep in mind that if you do not also enable the Set default expiration option you will be hurting your site's performance!

Note

The lack of other options is intentional and has to do with an IIS limitation. IIS, unlike Apache, only offers a binary switch for ETags: you either send them or you don't.

Referrer Policy Header

While surfing, your browser will send out some information about the previous you were visiting (the Referrer that brought you to the new page). This is useful for analytics, for example you can easily track down how many visitors came from Twitter or any other page.

However, there are security implications about the Referrer header. What if on the private area of your website there are sensible information? Think about a private support area, where there is a ticket with the link www.example.com/private-support/help-my-site-www-foobar-com-is-hacked ; you post a reply with a link to a Stack Overflow reply, the user clicks on it and... whops! Now Stack Overflow knows that the site www.foobar.com was hacked.

The Referrer Policy header will instruct your browser when to send the Referrer header and how many information you want to share.

- **Do not set any policy** You're not setting any instruction to the browser
- **(Empty)** You do not want to set the Referrer Policy here (as header) and the browser should fallback to other mechanisms, for example using the `<meta>` element or the `referrerpolicy` attribute on `<a>` and `<link>` elelements.
- **no-referrer** Never send the referer header
- **no-referrer-when-downgrade** The browser will not send the referrer header when navigating from HTTPS to HTTP, but will always send the full URL in the referrer header when navigating

from HTTP to any origin. It doesn't matter whether the source and destination are the same site or not, only the scheme.

Source	Destination	Referrer
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
http://www.yoursite.com/url1	http://www.yoursite.com/url2	http://www.yoursite.com/url1
http://www.yoursite.com/url1	http://www.example.com	http://www.yoursite.com/url1
http://www.yoursite.com/url1	https://www.example.com	http://www.yoursite.com/url1
https://www.yoursite.com/url1	http://www.example.com	NULL

- **same-origin** The browser will only set the referrer header on requests to the same origin. If the destination is another origin then no referrer information will be sent.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL
https://www.yoursite.com/url1	https://www.example.com	NULL

- **origin** The browser will always set the referrer header to the origin from which the request was made. This will strip any path information from the referrer information.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.example.com	https://www.yoursite.com/

Warning

Navigating from HTTPS to HTTP will disclose the secure origin in the HTTP request.

- **strict-origin** This value is similar to `origin` above but will not allow the secure origin to be sent on a HTTP request, only HTTPS.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/

Source	Destination	Referrer
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL
http://www.yoursite.com/url1	https://www.yoursite.com/url2	http://www.yoursite.com/
http://www.yoursite.com/url1	http://www.yoursite.com/url2	http://www.yoursite.com/
http://www.yoursite.com/url1	http://www.example.com	http://www.yoursite.com/

- **origin-when-cross-origin** The browser will send the full URL to requests to the same origin but only send the origin when requests are cross-origin.

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	https://www.example.com	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.example.com	https://www.yoursite.com/
http://www.yoursite.com/url1	https://www.yoursite.com/url2	http://www.yoursite.com/

Warning

Navigating from HTTPS to HTTP will disclose the secure URL or origin in the HTTP request.

- **strict-origin-when-cross-origin** Similar to `origin-when-cross-origin` above but will not allow any information to be sent when a scheme downgrade happens (the user is navigating from HTTPS to HTTP).

Source	Destination	Referrer
https://www.yoursite.com/url1	https://www.yoursite.com/url2	https://www.yoursite.com/url1
https://www.yoursite.com/url1	https://www.example.com	https://www.yoursite.com/
https://www.yoursite.com/url1	http://www.yoursite.com/url2	NULL
https://www.yoursite.com/url1	http://www.example.com	NULL

- **unsafe-url** The browser will always send the full URL with any request to any origin.

8.4. System configuration

The host name options are used for the HSTS, Redirect www and non-www addresses and Redirect this (old) domain name to the new one features of the .htaccess Maker. The base directory option is used even when all of the .htaccess Maker options are disabled; it's used for the Joomla SEF URL block which cannot be disabled.

As a result, if you transfer your site on a new host you MUST change these configuration parameters to reflect your new server configuration. Do note that this will not happen automatically, even if you are using Akeeba Backup to transfer the site. In fact, you must remove your .htaccess file, change this parameters and then let Admin Tools create a new .htaccess file before you can use your site's front-end.

System Configuration

This final section contains all the options which let the Web.Config Configuration Maker know some of the most basic information pertaining your site and which are used to create the rules for some of the options in the previous section.

Host name for HTTPS requests (without https://)	Enter the site's domain name for secure (HTTPS) connections. By default, Admin Tools assumes it is the same as your site's domain, but you have to verify it as it may be different on some hosts, especially on shared hosts. Do not use the https:// prefix, just the domain name and path to your site. For example, if the address is `https://www.example.com/joomla` then type in `www.example.com/joomla`.
Host name for HTTP requests (without http://)	Enter the site's domain name for regular (HTTP) connections. By default, Admin Tools assumes it is the same as the address you are connected to right now, but you have to verify it. Do not use the http:// prefix, just the domain name and path to your site. For example, if the address to your site's root is `http://www.example.com/joomla` then type in `www.example.com/joomla`.
Base directory of your site	This is the directory where your site is installed. For example, if it is installed in a directory named `joomla` and you access it on a URL similar to `http://www.example.com/joomla` you have to type in `/joomla` in here. If your site is installed on the root of your domain, please use a single forward slash for this field: `/`

9. Web Application Firewall

Note

This feature is only available in the Professional release

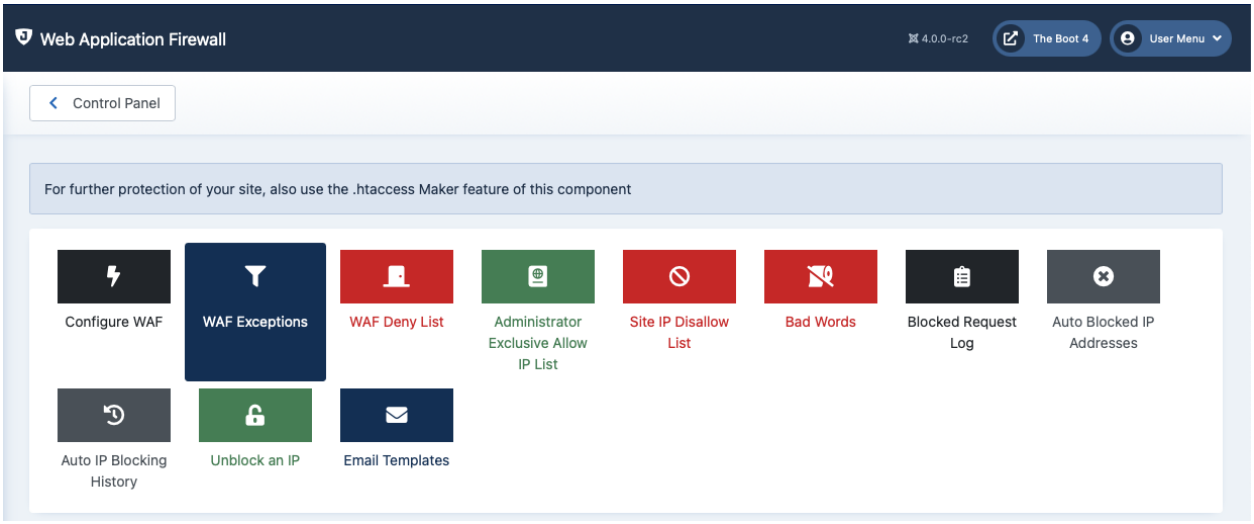
The Web Application Firewall feature of Admin Tools is designed to offer real-time protection against the most common fingerprinting attacks, used by attackers to deduce information about your site in order to tailor an attack to it, and the most common attacks. The real-time protection is performed by the "System - Admin Tools" plugin.

Before configuring Admin Tools' WAF you have to make sure that the plugin is published and it's the first to run, i.e. it should appear first in the ordering menu. These conditions are automatically applied when you install the Admin

Tools bundle. However, if you have installed more system plugins make sure that plg_admintools is published before all other system plugins. If not, the protection offered will not be thorough. Do note that, by default, Admin Tools will try to automatically reorder its system plugin as the first published plugin.

When you launch the Web Application Firewall feature of Admin Tools you are presented with its panel page:

The Web Application Firewall page



Clicking on any icon will launch the respective sub-tool. The Back button on the upper right-hand corner will get you back to the Control Panel page.

9.1. Configure WAF

This page lets you configure Admin Tools' Web Application Firewall. This tells Admin Tools how to protect your site. By default, only a basic set of options is enabled. When you use the Quick Setup Wizard feature when you first install Admin Tools a slightly bigger subset of features which are generally “safe” for use on most sites will be enabled.

Using this page you can tailor Admin Tools' protection for your site. Remember that the options are not automatically applied; you will need to click the Save button to apply them. If you change your mind midway through changing the options click on the Back button to return to the Web Application Firewall control panel page.

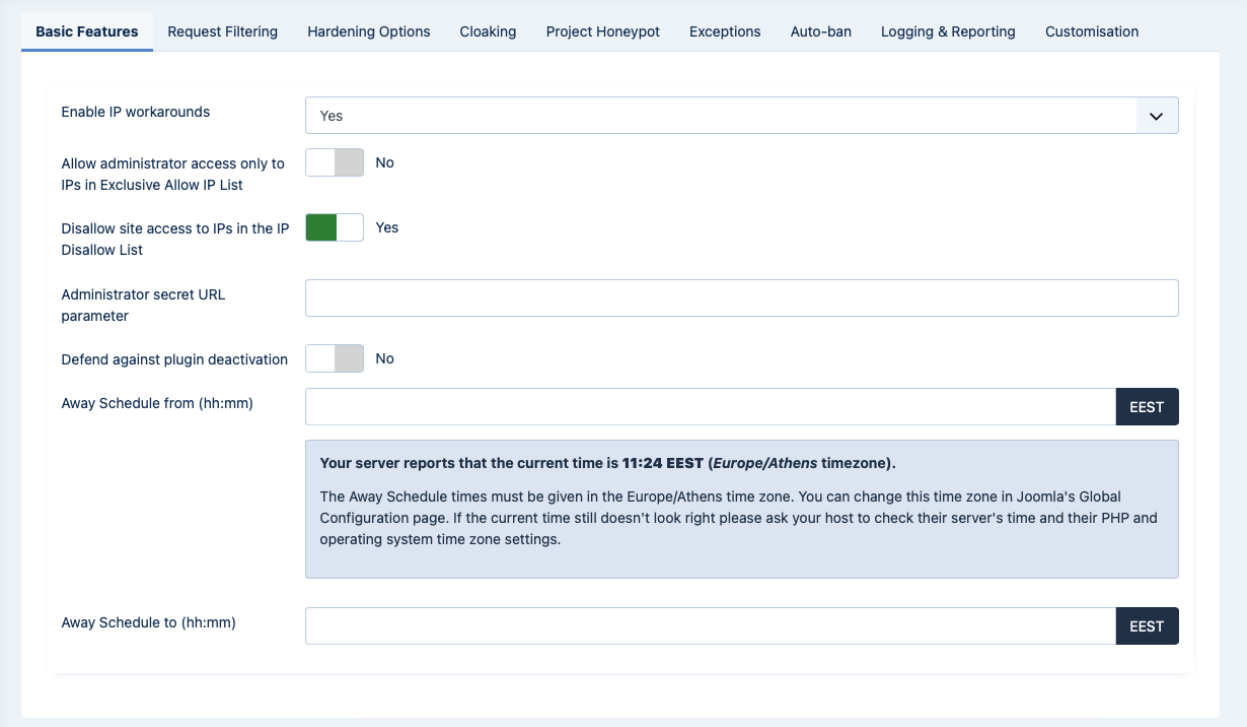
Important

If you do something wrong and you inadvertently lock yourself out of the administrator area of your site, do not panic! Read this section about regaining entrance.

The Configure WAF page is split into several tabs to make it easier for you to locate the correct option. The documentation of this page is organized as one section per tab to help you locate the option you are looking for.

9.1.1. Basic Features

WAF: Basic Features



The Basic Features section contains the very basic options which allow you to control who can access your site.

Enable IP workarounds

Some sites are behind a load balancer, caching proxy, CDN (e.g. CloudFlare) or third party web application firewall service (e.g. Sucuri). In these cases the IP address your web server sees is always the same, regardless of who is actually visiting your site. Therefore Joomla and Admin Tools will always see the same IP address which prevents some features from working properly. Especially for Admin Tools this can be a major problem because the Exclusive Allow IP address and all IP blocking features will no longer work correctly.

There are two ways to deal with this, depending on your Joomla and Admin Tools version.

Joomla 4 and Admin Tools 7 or later

Go to your site's Global Configuration. Find the “Behind Load Balancer” setting and set it to Yes. Click on Save.

Back in Admin Tools' Configure WAF page set the Enable IP Workarounds option to No.

If *and only if* you see that everyone is blocked from accessing the site as soon as Admin Tools blocks an attack should you set Enable IP Workarounds to Yes. Normally this is NOT required because Joomla 4 uses the same code we added in Admin Tools back in 2012 to apply IP workarounds when the “Behind Load Balancer” setting is enabled. We have not seen any practical use case where this option was required with Joomla 4, therefore this option is scheduled for removal when we stop supporting Joomla 3 towards the end of 2023.

Joomla 3 and Admin Tools 6 or earlier

Admin Tools 6 uses its own code to determine the visitor's IP address, without going through Joomla's copy of our code. This was necessary to support older versions of Joomla 3 which did not have the “Behind Load Balancer” option.

If your site is behind a load balancer, caching proxy, CDN etc you need to set this option to Yes.

If you are unsure about your server setup set this option to Auto. Then wait until there is an attack on your site. Did your site become inaccessible **for everyone** after the last time Admin Tools detected an attack? Do you always see the same IP or variations of the same in the Blocked Requests Log? If the answer to both questions is "yes" then you must set the "Enable IP workarounds" option to Yes.

How does this work?

Load balancers, proxies, CDNs etc set up an HTTP header called X-Forwarded-For which contains the list of IP addresses throughout the forwarding chain, up to an including the real IP address of the visitor of the site. Enabling Joomla 4's “Behind Load Balancer” option or Admin Tools' “Enable IP Workarounds” option will use the contents of this HTTP header *instead of* the visitor's IP address reported by the browser.

There are two cases where you do NOT want to do that:

- If your site is NOT behind a load balancer, proxy, CDN etc. In this case the X-Forwarded-For header could be set by an attacker to cover their tracks. Essentially, they would be spoofing their IP address to evade blocking.
- If your web server already takes the X-Forwarded-For header into account, e.g. using the Allow IP forwarding setting in the NginX Config Maker. In this case the visitor's IP address reported by the server is the correct one; the web server has taken the contents of the X-Forwarded-For header into account. Enabling Joomla 4's “Behind Load Balancer” option or Admin Tools' “Enable IP Workarounds” option won't hurt but it's unnecessary.

Remember the golden rule. If unsure, set to No. If crap happens as a result of setting this option to No then set it back to Yes.

Allow administrator access only to IPs in the Exclusive Allow IP List

When enabled, only IPs in the Exclusive Allow IP List (see the following sections of this documentation about configuring it) will be allowed to access the administrator area of the site. All other attempts to access the administrator pages will be redirected to the site's home page. Be careful when using this feature! If you haven't added your own IP to the Exclusive Allow IP List you will get locked out of your administrator area!

Please look into the Exclusive Allow IP List documentation section for more information.

Important

IPs added to the Administrator Exclusive Allow IP List are fully vetted as far as Admin Tools is concerned. This means that no security measure will be applied against them. Please place only very well trusted IPs in this list! If an attack is launched from this IP, it will not be blocked by Admin Tools!

Disallow site access to IPs in

When enabled, if the visitor's IP is in the IP Disallow List (see the following sections of this documentation about configuring it) they will immediately get a 403 Forbidden error message upon trying to access your site.

the IP Disallow List

Administrator secret URL parameter

Normally, you can access your site's administrator area using a URL similar to `http://www.example.com/administrator`. Potential hackers already know that and will try to access your site's administrator area the same way. From that point they can try to brute force their way in (guess your username and password) or simply use the fact that an administrator area exists to deduce that your site is running Joomla! and attack it. By entering a word here, you are required to include it as a URL parameter in order to access your administrator area. For instance, if you enter the word *test* here you will only be able to access your site's administrator area with a URL similar to `http://www.example.com/administrator?test` . All other attempts to access the administrator area will be redirected to the site's home page. If you do not wish to use this feature, leave this field blank.

The secret URL parameter *must* start with a letter. If it starts with a number, you will immediately get a "Illegal variable _files or _env or _get or _post or _cookie or _server or _session or globals passed to script" error when trying to access your site's administrator back-end. It should also contain only lowercase and uppercase ASCII characters and numbers (a-z, A-Z, 0-9), dashes and underscores in order to ensure the widest compatibility with all possible browser and server combinations.

Any other characters you use (such as: punctuation; special characters; Latin letters with accents or diacritics; Greek, Cyrillic, Chinese, Japanese and other ethnic script characters)will have to be URL-encoded. This makes it difficult and tricky to use, hence our recommendation not to use it.

Moreover note that some extended Unicode characters such as certain Traditional Chinese characters and Emoji cannot be used. They will be either rejected by the server or trigger a server protection which will lock you out from your site at the hosting level (you'll have to contact your host to unblock you).

Finally note that on most servers this is case sensitive, i.e. abc, ABC and Abc are three different secret words.

Tip

Some servers do not work with `http://www.example.com/administrator?test` due to their configuration. You may want to try using `http://www.example.com/administrator/?test` (add a slash right before the question mark) or `http://www.example.com/administrator/index.php?test` (add /index.php right before the question mark). One of them is bound to work on your server. Unfortunately, there is no way to know which ones will work on your server except for trying them out. The first one (`http://www.example.com/administrator?test`) works on 95% of servers and that's what we recommend trying out first.

Please be aware of some pitfalls with this feature:

1. This feature works by checking whether the URL used to log into your site has the secret URL parameter present in it. If your session expires and you try to access any backend page Joomla will redirect you to the site's administrator login page *without* the secret URL parameter. As a result you will be redirected to the frontend of the site and a Blocked Request will be logged against your IP with the reason “Admin Query String”.

   If this happens too many times, e.g. because you have multiple background tabs opened to different administrator pages which get silently reloaded by your browser, or because your

browser's “Frequently Used” / ”Top Sites” / similar feature tries to silently load an administrator page you are using frequently you may find that your IP is temporarily blocked.

The best way to prevent that from happening is to a. not have multiple administrator pages open in different tabs / browser windows at the same time; b. close all administrator page tabs when you are going to not be interacting with them for more than a minute or two; c. use Joomla's Logout feature when you are not going to be using your site's administrator for a few minutes; and d. set the session expiration time in your site's Global Configuration to a higher value which is representative of your workflow (e.g. 300 minutes if you are likely to leave an admin page open for up to 5 hours before coming back to it).

Alternatively, set the “Browser cookie override for the administrator secret URL parameter” to a setting *other than* Disabled.

2. As alluded to above, sometimes you may see that your IP is blocked even though you haven't tried visiting your site's administrator, with Blocked Requests recorded from your IP address with the reason “Admin Query String”. This is NOT a bug in Admin Tools. It's how your **browser** works. Most modern browsers have a pinned sites, reading list and/or frequently visited sites feature which is updated every time you open a new browser window or tab and sometimes also updated in the background, without further interaction from you. This means that your browser is accessing an administrator URL on your site because it appears in one of these features. If this URL does not contain the secret URL parameter and your session has expires a Blocked Request from your IP address is recorded.

   There is no way for Admin Tools (or anything on your server, really) to know that these requests are automated background requests from your browser. As far as your browser is concerned, these are legitimate requests coming from a real browser. Since the Joomla session does not have the administrator secret URL parameter set when this happens they will be treated as requests to be blocked.

   The only thing you can do is either disable these features on your browser (or at least remove any administrator URLs to your site from these features); OR set the “Browser cookie override for the administrator secret URL parameter” to a setting *other than*Disabled; OR not use the administrator secret URL parameter.

   In fact, we recommend using the Administrator Password Protection feature *instead of*the administrator secret URL parameter: it is more secure, more reliable, more resistant to Denial of Service attacks and does not suffer from the accidental locking out of your IP address . The downside is that the Administrator Password Protection feature only works on Apache and Litespeed, the two servers which support .htaccess files.

3. If you are sharing your public (Internet-facing) IP address with other people, e.g. in an IPv4 network using NAT to access the Internet, if one person gets the IP address blocked then all people behind the same IP address are blocked as well. This is very important if you are working in an office / company with other developers, site integrators and site administrators on a public site. One member of the team gets blocked, everyone is blocked. This is not a bug; as far as the site's server knows, *it receives requests from the same IP address* regardless of the person, machine or browser being used. This problem is mostly resolved if both you and the server are using IPv6. In this case each machine has a different IP address, even when using the equivalent of NAT under IPv6.

Browser cookie override for the administrator

As noted above, when your login session expires and you try to access an administrator page you will get redirected to the site's frontend and a Blocked Request will be logged against your IP with the reason “Admin Query String”. If that happens enough times — for example because your browser is trying to silently access administrator pages without your interaction such as when

secret URL parameter

you have multiple background tabs open or because of its Frequently Visited / Top Sites / similar feature — you might have your own IP temporarily blocked, preventing you from accessing your site.

When this option is set to a value *other than* Disabled, Admin Tools will set a secure browser cookie when you log into your site's administrator. If this cookie is present and valid Admin Tools will allow you access to Joomla's administrator login page *even if* the URL does not include the Administrator Secret URL Parameter — like, for example, when your session expires. This allows you to log back into your site's administrator without a Blocked Request being logged for your IP address therefore without risking getting blocked off your site.

The cookie is removed from your browser and made invalid in the database when you a. log out of the site's backend (see caveat below); b. when you change the user's password (if Joomla's Remember Me plugin is published); and c. when a possible attack against this feature is detected.

Caveat: if you have enabled Linked Sessions on your site the cookie will be removed when you log out from either the backend *of the frontend* of your site. That's how Joomla works, it's not an Admin Tools bug. Joomla's Linked Sessions feature issues a logout on both the frontend and backend application in such a way that the backend application cannot discern whether it's a real backend logout or a Linked Sessions logout.

There are four settings for this option:

- **Disabled**. This feature is disabled. No new cookies will be set and existing ones are ignored.
- **Enabled**. This feature is enabled. New cookies are set when you log into your site, removed when you log out and used instead of the Administrator Secret URL Parameter when it is missing from the administrator login URL or the wrong secret URL parameter is used.
- **Enabled, notify when used**. Same as “Enabled”, additionally prints a reminder message in the login page when this feature is used instead of the Administrator Secret URL Parameter.
- **Enabled, remind to use the full URL**. Same as “Enabled, notify when used”, additionally prints a message reminding you to use the correct administrator login URL, not to have multiple browser tabs open in the background and log out when you are not going to be using the site's administrator pages for the next few minutes. Furthermore, if the last user who had logged into the site with the current browser was a Super User it will additionally print a reminder that you may need to adjust your Session Length and that this feature can be controlled from the Components, Admin Tools, Web Application Firewall, Configure WAF page.

We recommend setting this feature to “Enabled, notify when used” or “Enabled” on most sites. The “Enabled, remind to use the full URL” is normally only necessary as a default, to remind Super Users that this feature exists and how to control it.

If you want to customise the message displayed when this is set to “Enabled, notify when used” and the first part of the message displayed when this is set to “Enabled, remind to use the full URL” you can do a language override [https://docs.joomla.org/Language_Overrides_in_Joomla] for the language key `PLG_ADMINTOOLS_MSG_ADMINPW_COOKIE` .

If you would like to customise the second half of the messages printed to regular backend users and Super Users when this is set to “Enabled, remind to use the full URL” you can do a language override [https://docs.joomla.org/Language_Overrides_in_Joomla] for the language keys `PLG_ADMINTOOLS_MSG_ADMINPW_COOKIE_NONSUPERUSER` and `PLG_ADMINTOOLS_MSG_ADMINPW_COOKIE_SUPERUSER` respectively.

The cookies for this feature are stored in Joomla's #__user_keys database table, along with Joomla's Remember Me secure cookie settings and possibly other third party extensions' secure cookie settings, as per Joomla's best practices for implementing any feature requiring the use of secure cookies. Joomla's Remember Me may remove ALL cookie settings for a user when the user logs out, their password changes or it detects a possible attack — this includes the secure cookie settings for Admin Tools itself. Third party extensions may remove secure cookie settings for a user under other circumstances as well. Before assuming this feature does not work please make sure that neither Joomla's Remember Me nor a third party extension are removing records from that table.

Defend against plugin deactivation

When enabled, Admin Tools will prevent back-end users from trying to disable (unpublish) the plugin. This means that you will also be unable to unpublish the plugin until you disable this option!

Away Schedule

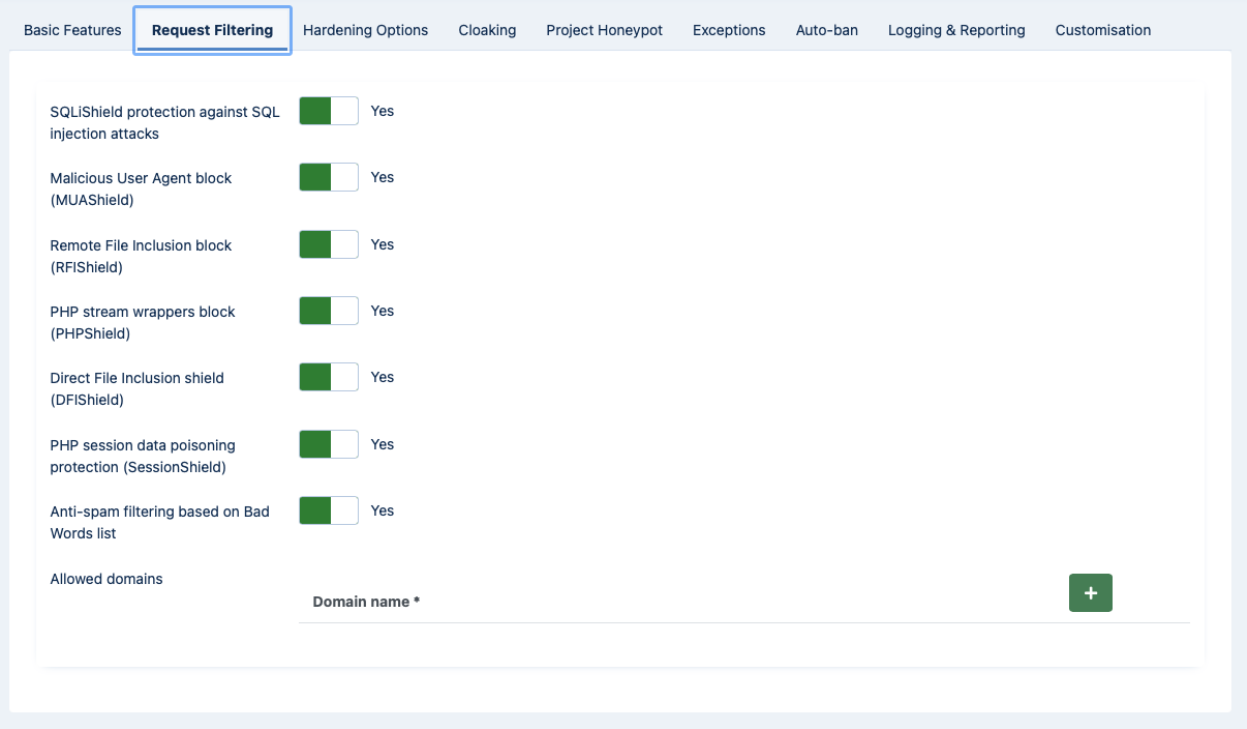
By default, Joomla! allows users with back-end access to log in to the site any time of the day. On smaller sites which have only a handful, or even just one, administrators on the same zone this means that someone can try to log in with a stolen username / password while you are fast asleep and unable to respond to the unexpected login. This where the Away Schedule comes into play. If a user with back-end login privileges tries to log in to the front- or back-end of your sute between the "from" and "to" hour of the day they will be denied login. Moreover, if someone tries to access the administrator login page during that time they will be redirected to the front-end of the site – even if the have used the correct Administrator secret URL parameter.

Please note that this feature does not affect your regular users logging in to the front-end of your site. It only prevents users belonging to a group with the *Admin Login* privilege. You can check which groups have that privilege by clicking on the System, Global Configuration menu of your site and visiting the Permissions tab.

The From and To time has to to be entered in 24-hour format with trailing zeros, e.g. 09:15 for a quarter past 9 a.m. and 21:30 for half past 9 p.m. The time is entered in your server's timezone which may be different than the timezone you live in. For your convenience, the server's time at the time of the page load (in 24 hour format) is shown to you right below the Away Schedule.

9.1.2. Request Filtering

WAF: Request Filtering



The Request Filtering section contains the options which are the heart and soul of the Web Application Firewall. Admin Tools will monitor incoming requests and their variables, filter them using these options and decide which requests seem to be nefarious, blocking them.

SQLiShield protection against SQL injection attacks

When enabled, Admin Tools will try to detect common SQL injection attacks against your site and block them.

But what is a SQLi attack? A few Joomla extension developers are hobbyists, without experience and / or security training; or mistakes do happen, as Joomla itself has found out the hard way. One of the common mistakes they do is to make assumptions about the nature or the content of user-submitted data, interpolating them into database queries as-is. Database queries are also called SQL queries (SQL, pronounced "sequel", is the shorthand for Structured Query Language, the programming language the database queries are written in). An attacker can exploit this mistake by sending data which have the effect of terminating the developer's database query and starting a new one which either dumps privileged data -such as usernames and passwords- or modifies data into the database - such as adding a new Super User under the control of the attacker. This class of attacks is called an SQL Injection, or SQLi for short, since the attacker "injects" his own code into a SQL query running on the site.

Malicious User Agent block (MUAShield)

Many hackers will try to access your site using a browser configured to send malicious PHP code in its user agent string (a small piece of text used to describe the browser to your server). The idea is that buggy log processing software will parse it and allow the hacker to gain control of your website. When enabled, this feature allows Admin Tools to detect such attacks and block the request.

Remote File Inclusion block (RFIShield)

Some hackers will try to force a vulnerable extension into loading PHP code directly from their server. This is done by passing an http(s):// or ftp:// URL in their request, pointing to their malicious site. When this option is enabled, Admin Tools will look for such cases, try to fetch the remote URL and scan its contents. If it is found to contain PHP code, it will block the request.

Important

If your site starts throwing white pages when submitting a URL in your site's front-end, please disable this option. The white page means that your server is not susceptible to this kind of attack and doesn't properly advertise this to Admin Tools when requested. In this case, Admin Tools crashes while trying to scan the contents of the remote location, causing the white page error. Disabling this option in such a case poses no security risk.

Remote PHP protocol block (PHPShield)

Some hackers will try to read the files of your site using the php:// wrapper and some advanced PHP filters. When this option is enabled, Admin Tools will block every request that contains the php:// string.

Direct File Inclusion shield (DFIShield)

Some hackers try to trick vulnerable components into loading arbitrary files. Depending on the vulnerable component, the file will either be output verbatim or parsed as a PHP file. This allows attackers to disclose sensitive information about your site or run malicious code uploaded to your site through another vulnerable vector, e.g. an unfiltered upload of executable PHP code. When this option is enabled, Admin Tools will search the request parameters for anything which looks like a file path. If one is found, it will be scanned. If it is found to contain PHP code, the request will be rejected.

Important

This feature does NOT prevent dumping of non-PHP files, e.g. the `/etc/passwd` file of Linux servers.

PHP session data poisoning protection (SessionShield)

Prevents malicious input data which can be used to trick PHP's internal session handler into executing arbitrary code when it's restoring the user session.

The PHP session unserializer has a major bug which makes it misinterpret stored session data if they contain specific character combinations, overwriting the legitimate session data with the attacker-defined contents. Combined with some other features of PHP this can lead to the execution of arbitrary PHP code. **In short, attackers can send malicious data in one page load and get arbitrary code to execute in the next page load**. This feature of Admin Tools detects and blocks this kind of malicious data. CAUTION: It may block some legitimate requests as well.

Warning

This attack vector is NOT unique to Joomla!. It is a low level PHP bug / vulnerability which was fixed only in PHP 5.5.4 and later versions. Furthermore, default PHP settings even in newer versions of PHP use the old, vulnerable setting, putting all sites using session data at risk! We **VERY STRONGLY** recommend that all our clients use PHP 5.5.4 or later and edit their php.ini to modify this line:

```
session.serialize_handler = php
```

to

```
session.serialize_handler = php_serialize
```

This is the ONLY guaranteed way to fix this low level PHP vulnerability across all possible attack vectors, including those yet undiscovered.

Anti-spam filtering based on Bad Words list

When enabled, all requests containing at least one word in the Bad Words list (configured separately, see the next sessions) will be blocked. By default the Bad Words list is empty; you have to configure it to match your site's needs. One good idea is to include pharmaceutical, luxury watches and shoes brand names, as this makes up the majority of comment and contact spam received on web sites.

ItemidShield

Joomla's powerful frontend display comes, to a large extent, from being to configure its components and modules per menu item. Each menu item has a numeric ID, called “Itemid” in Joomla parlance. In fact, the Itemid is always present in the request parameters. When you have ‘Search Engine Friendly URLs’ turned off you can see it in the request. When it's enabled, Joomla automatically populates it from the URL query, i.e. the path in the URL you are using to access a page on your site (but in this case it can also be overridden in the URL). This is such a basic concept that Joomla's core code make the assumption that the Itemid is always a positive integer.

If someone makes a request with an Itemid which is not a positive integer, for example something like `https://www.example.com/foobar?Itemid=123/` (note the slash after the number 123, it's part of the Itemid value!), Joomla will throw an error and a PHP exception email will be sent to you if you've configured this feature in Admin Tools. In most cases it's due to a search engine having cached an invalid URL like the one above. In some cases it might be a malicious probe with a technique called fuzzing, i.e. sending random data in known URL parameters to see if the site breaks in a way that can be exploited by an attacker. While Joomla itself will merely throw an exception, it is possible that system plugins executing before Joomla's router kicks in read the invalid Itemid and behave unexpectedly.

The ItemidShield deals with these requests in one of the following ways:

- **Off**. The ItemidShield feature is turned off. Any random Itemid value will reach Joomla and its extensions.
- **Clean**. The ItemidShield will try to convert the Itemid value to a positive integer. If it fails, it will unset it, letting Joomla figure out the routing from the URL's path if any. This is the default setting with a balanced approach which offers security without risking blocking anything important.
- **Block**. The ItemidShield feature will inspect the Itemid value. If it is NOT a positive integer it will block the request and record it as a Blocked Request in Admin Tools' log. Repeat blocked requests may get the IP address temporarily or permanently banned per your Auto-ban settings. This is a very defensive setting, recommended for sites being probed relentlessly.

Allowed domains

This is a list of fully qualified domain names your site can be accessed on, one domain per line. DO NOT enter http:// or https:// in front, do NOT enter the / after the domain name or the path that follows it. This is a domain name, not a URL. For example: `example.com`. You do not need to enter the www/non-www versions of the domain names or domain names which resolve to the localhost IP address (127.0.0.1 for IPv4 or ::1 for IPv6). If an attacker tries to access your site with an HTTP Host header that does not match these domain names (or their www/non-www versions) they will receive an HTTP 400 Bad Request error message.

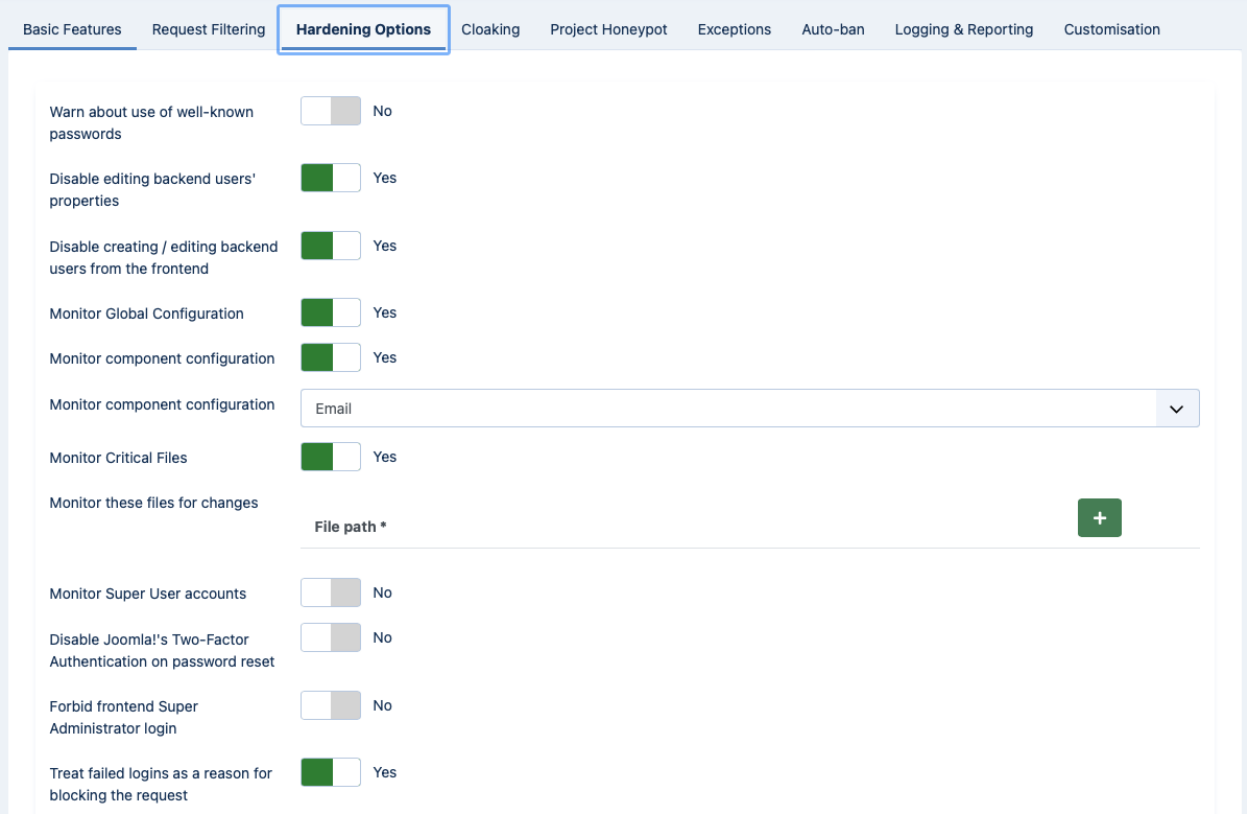
This feature mitigates a class of attacks called “HTTP Host spoofing” which affects *a stark minority* of servers, mostly servers which were set up by someone who doesn't understand web server security enough or at all. On those servers you can send an HTTP Host header which confuses the server into believing that this is the domain name it's running on. So, even though you are accessing a site on www.example.com you can send it a `Host: www.evil.hack` HTTP

header and now all URLs generated by the server will use the www.evil.hack domain name. This is used in phishing attacks to misdirect a submitted form with login credentials to a server under the attacker's control even though the browser's address bar shows a legitimate domain name.

If you are on an affected server you are VERY STRONGLY recommended to use this feature INSTEAD OF setting the $live_site URL in configuration.php, the latter being the traditional but incorrect way of mitigating such an issue. Setting the $live_site URL limits your site to exactly one domain name (remember that example.com and www.example.com are two different domain names!) and protocol (HTTP vs HTTPS). Therefore using $live_site is extremely limiting and can cause your site to stop working if you try to enable/disable HTTPS everywhere in Joomla's Global Configuration, enable/disable www to non-www redirections etc. Moreover, the $live_site URL in configuration.php does NOT protect against all host spoofing attacks. What Admin Tools does will indeed protect all requests handled by Joomla against such attacks without causing any of the adverse effects of Joomla's recommended course of action.

9.1.3. Hardening Options

WAF: Hardening Options (partial screenshot)



With the Hardening Options section you are able to harden the way some basic Joomla! features work. These are advanced settings, so please make sure you understand what each option does before you enable it.

Warn about use of well-known passwords
: When this option is enabled, Admin Tools will connect to the Have I Been Pwned database [https://haveibeenpwned.com/API/v2#PwnedPasswords] and check if the hash of the current password is known. If a match is found, the user will be blocked from using an insecure password.

Wait, are you sharing my password? Is that service secure?

First of all, **we do not share your password**. We're only sending *a fraction* (only first 5 chars) of the *hash* of your password. This method is called k-anonymity [https://en.wikipedia.org/wiki/K-anonymity] and it's a very secure way to share sensitive data without compromising its privacy. Your password CAN NOT be derived from this partial information. If you want to read the whole details of this implementation, you can take a look at this page [https://www.troyhunt.com/ive-just-launched-pwned-passwords-version-2/].

Regarding the external service, it is powered by two well known figures: Troy Hunt (a security research) and CloudFlare (leader in Content Deliver System services). The service is so important for the security of computer systems that even the United States of America Federal Bureau of Investigation (FBI) contributes to it.

User groups to check for well-known passwords

Most likely you want to enable this feature only for specific groups: Admin Tools will check for well-known passwords only users belonging to those groups (default is Super Users)

Disable password reset for specific User Groups

Joomla allows all users who do not have the Super User permission to request a self-service password reset. This is typically through the “Forgot your password?” feature in the frontend login module and the frontend users component, both of which go through the frontend users component to send an email to the user to help them reset their password.

In some cases it is prudent to disallow this feature for certain types of users. For example, you may have user groups which do not have the Super User permission but can be critical to the operation of your site such as people doing end user support, handle personal or privileged information, control content publication workflows etc. A successful account takeover could have far-reaching implications for the operation of your site and/or business.

This feature allows you to disable the self-service password reset feature for users belonging in specific user groups.

Please note that this feature DOES NOT control whether users with Super User permissions are allowed to reset their password! Joomla itself automatically disallows self-service password resets for these users and this cannot be changed (it's a hard-coded check no third party plugin can change). This means that Super Users cannot reset their own password using the Forgot Your Password feature; this has to be done either by logging in and editing their user profile OR by having their user profile edited by another user with sufficient permissions to edit user profiles. This is a built-in Joomla feature, not under the control of Admin Tools.

Finally, please note that this feature only applies to self-service password resets sent by Joomla's frontend com_users component. It DOES NOT prevent third party software implementing its own password reset feature from allowing these users to reset their passwords.

User groups blocked from resetting the password

Choose the user groups which will be prevented from using Joomla's self-service password reset. Only visible and applicable when the “Disable password reset for specific User Groups” option is enabled.

Only users which are directly assigned a user group will be disallowed to reset their password. That is to say, you cannot just select the Public group and expect nobody to be able to use this feature; the restriction is NOT applied to child user groups.

Also note that you do not need to select the Super Users group or any other group which grants the Super User permission. Joomla itself automatically disallows self-service password resets for these users and this cannot be changed (it's a hard-coded check no third party plugin can change).

	This means that Super Users cannot reset their own password using the Forgot Your Password feature; this has to be done either by logging in and editing their user profile OR by having their user profile edited by another user with sufficient permissions to edit user profiles. This is a built-in Joomla feature, not under the control of Admin Tools.
Disable editing backend users' properties	When enabled, trying to modify the settings of an existing or create a new Manager, Administrator or Super User will fail.
Disable creating / editing backend users from the frontend	You should normally be unable to create a new user with administrative backend login privileges from the public frontend. When this option is enabled it will treat attempts to create this kind of accounts as hacking attempts and block them from executing. This addresses some of the most notorious zero day attacks in Joomla! which took place between 2015 and 2016 and we recommend having it turned on at all times. If you need to disable it we STRONGLY recommend rethinking whatever leads you to disable this setting because it's creating a gaping security hole on your site.
Monitor Global Configuration	When this is enabled and someone tries to change the Global Configuration of Joomla!, either from the back-end or the front-end, you will either be notified or they will get blocked (depending on your settings below). This feature is designed to protect you against sly hackers or malicious administrators who subtly change your site's configuration for nefarious purposes, e.g. by elevating the global privileges of user groups.
Monitor component configuration	When this is enabled and someone tries to change the configuration of any core Joomla! or third party component (what you see when you click Options in a component's toolbar) from the back-end of your site you will either be notified or they will get blocked (depending on your settings below). This feature is designed to protect you against sly hackers or malicious administrators who subtly change your components' configuration for nefarious purposes, e.g. by elevating the privileges of user groups with regards to a particular component.
Action for configuration monitoring	This option works in conjunction with the two above. You define what do you want to do when either global or component configuration is enabled and a change is detected in the configuration. • *Email* will simply send a warning email to the email addresses you've configured to receive emails for blocked requests and only if you have configured such email addresses. The changes in configuration will go through. This is the recommended setting for most sites. • *Block* will treat any such changes as a reason to block the request. The changes in configuration will NOT go through. This setting should only be used on "locked down" sites where configuration changes are not expected (or will only be performed by an administrator who has adequate access to modify Admin Tools' configuration).
Monitor Critical Files	Critical files commonly modified by hackers (index.php, administrator/index.php and the index.php, error.php and component.php of all templates installed on the site) will be monitored for changes on every page load. If a change is detected you will be notified by email. This usually lets you get an ahead warning in case of a successful hacking attempt.
Monitor these files for changes	Monitor the following files (one per line) for changes. If a change is detected you will be notified by email. The file paths must be entered relative to the site's root, without a leading forward slash.
Monitor Super User accounts	Admin Tools will keep track of the user accounts with Super User access. If a new Super User is added outside of Joomla's Users page you will be notified by email. Moreover, the detected new Super User accounts will be automatically blocked. The idea is that these Super Users are most likely create as the result of a hack or rogue code.

Please note that users created or added by other Super Users in the backend of the site using Joomla's Users page will NOT be blocked by this feature. If you wish to disable this please use the Disable editing backend users' properties feature.

Disable Joomla!'s Two-Factor Authentication on password reset

When enabled, Admin Tools will disable the Joomla! Two Factor Authentication configuration for a user when they are resetting their password.

Joomla! allows every user of the site to enable Two Factor Authentication (TFA) for their user account. In case the user misplace their TFA device or is otherwise unable to use TFA they are given emergency one time passwords. However, many people forget to note them down or do not understand how to use them. Every time they cannot use TFA they have to contact an administrator of the site to disable TFA on their account. Even worse, when the user is an Administrator themselves they have no way to disable TFA without renaming files – and knowing which files to rename. This is where this Admin Tools feature comes in handy.

The workflow is the following: The locked out user starts by using the "Forgot your password?" link in Joomla! to request a password reset. The receive an email with instructions. They follow the link which takes them back to the site where they enter their username and the password reset authorisation code found in the email. Now they enter their new password. When the password changes, the "Disable Joomla!'s Two-Factor Authentication on password reset" feature of Admin Tools kicks in and disables Two Factor Authentication on this user's account. The user can now log in to the site using just their username and password.

Important

Please remember that this ONLY applies to the two factor authentication feature built in Joomla! itself. If you are using third party Two Factor Authentication solutions such as Akeeba LoginGuard this option will have NO effect on them.

We recommend AGAINST using this option because it can degrade the security of your user accounts. If an attacker gains control of the email account of a privileged user of your site, e.g. an Administrator or Super User, they will be able to reset their password AND disable their Two Factor Authentication at the same time. This will allow them to log into and take over your site. We strongly advise you to use a different Two Factor Authentication solution, e.g. Akeeba LoginGuard, with one or more fallback authentication methods. Alternatively, set up and use WebAuthn for logging into your site which bypasses the Two Factor Authentication and is far more secure than using a username, password and Two Factor Authentication code to log into your site.

Forbid front-end Super Administrator login

When enabled, it will not be possible for Super Administrators to log in to your site's front-end. This is a security precaution against password brute forcing. One common method is an attacker trying to login to the front-end of your site as a Super Administrator, trying different password until he finds the correct one. When this option is enabled, he will not be able to log in as a Super Administrator in the front-end of the site, crippling this brute forcing method of determining the Super Administrator password.

Treat failed logins as a reason for blocking the request

When enabled, failed login attempts of any kind of user (even simple registered users) count as a reason to block the request and are being logged in Admin Tools' Blocked Requests Log. There is a very useful implication to that. Since they count as security blocked requests they count towards the limit you set up in the automatic IP blocking. Therefore, after a number of failed login attempts, the user's IP will be automatically blocked for the duration you have set up.

Log usernames

By default, when a failed login is treated as a blocked request no other information is logged except the IP address of the failed login. This is very unhelpful if a user gets blocked and they

can't figure out what is their IP address. Enabling this option will also log the username they used for the failed login. The downside is that your Blocked Requests Log now contains the usernames of all failed logins which can be a privacy issue if the log file is leaked to an attacker or other unauthorised person due to a vulnerability in a third party extension or by a mistake by one of the administrators of the site.

Please note that Admin Tools WILL NOT log passwords for failed logins and we WILL NOT consider any feature request to implement this kind of option. If were to log failed logins' passwords we'd be essentially storing a password the user may be using on a different service OR a slight variation of their real password in plain text in the database. This can be a major security concern.

Deactivate users on failed login

Admin Tools can optionally deactivate existing user accounts when there are multiple failed attempts to log in using their username, protecting user accounts from brute force attacks. In here you can specify the number of failed logins and the time period these have to occur before the user is deactivated, e.g. 3 failed logins in 1 minute.

In order for this feature to work you must have enabled the Treat failed logins as a reason for blocking the request option above and NOT include `Login failure` in the Do not log these reasons option in the Logging And Reporting area of this configuration page.

The behaviour of this feature depends on the user registration setup of your site, as defined in Users, User Manager, Options in your site's back-end. When Allow User Registration is set to `No` this Admin Tools feature does not do anything at all! When Allow User Registration is set to `Yes` there are three possible behaviours depending on the setting of the New User Account Activation option:

- `Self`: The user is deactivated and an activation email is sent to them by Admin Tools using the `User re-activation` email template.
- `Admin`: The user is deactivated and an activation email is sent to all of your site's Super Users by Admin Tools using the `User re-activation` email template.
- `None`: This Admin Tools feature does absolutely nothing at all. The user is not deactivated and the fields for this feature are not editable. You are also shown an error message stating “User registration on your site is disabled, therefore Admin Tools can't deactivate users”.

Warn about self XSS

Display a message in browser console to warn the user to avoid running any command inside it. This can lead to hacking yourself (a.k.a. Self XSS attacks [https://en.wikipedia.org/wiki/Self-XSS]) and steal your account data.

Filter user registration by email

Admin Tools can block user registration based on the email domain they are using (listed in the field below):

- **Allow** Will allow registration only if the email domain is contained inside the list. A typical use case is to allow registration only from site company addresses or student of a campus
- **Block** Registration will be blocked if the user tries to use a domain contain in the list. This is usually useful if you want to block people from using temporary or disposable email accounts.

Email domains

Enter one domain per line. Having no non-empty lines disables this feature.

Below that you will find the Forgotten backend users section. This feature lets you automatically block or force a password reset for users with backend access who have not logged into the site for a very long time. This feature was inspired by a tweet by Jeff Atwood [https://twitter.com/codinghorror/status/1084583084035661826?s=21] (of Discourse fame) and our observations by logging into real world sites when our clients request us to do so.

The idea is that privileged user accounts who have not logged into the site for a very long time are probably left over user accounts the site owner forgot to disable when the person stopped having a reason to log into the site's administrator backend. The password of the forgotten user account may have been compromised in the meantime. For example, the user may have reused their password on a different site which got hacked; or they may had used an easy to guess password. If Two Factor Authentication isn't enabled on the account, an attacker who has successfully compromised the password could now log into your site. Since they are using a legitimate user account they do not get their request blocked and they have full access to your site with everything that entails about your site's integrity.

This Admin Tools feature is designed to prevent this kind of awkward situation. If a user with backend access has not logged in for the configured time period (default: 90 days) they will either be completely blocked from accessing the site or they will be forced to reset their password (default and recommended action). In the first case only another Super User can unblock them, by editing their user account. In the latter case the user will try to log in and Joomla! will immediately force them to reset their password. Password reset requires providing information sent by email. This way an attacker cannot use a compromised password; they cannot read the email sent to the legitimate account holder's email address, therefore they cannot reset the password and log into your site.

For even better protection of your site we recommend that you take two more optional steps. Make sure that all privileged users have Two Factor Authentication set up on their user account. Joomla has Two Factor Authentication built in. Alternatively, you can use our more thorough, free of charge Akeeba LoginGuard extension to provide Two Step Verification (it also lets you force certain user groups to enable it). Moreover, it is recommended to have inactive user accounts automatically deleted. This can be done, for example, with our free of charge Akeeba DataCompliance component for Joomla! (however, it will not delete Super User accounts by default to prevent any accidents -- deletion through Akeeba DataCompliance is irreversible by design as it implements the GDPR requirements of Data Minimization and the Right To Be Forgotten).

The following options are available for this feature:

Prevent forgotten backend users from logging in	Should this feature be enabled at all?
Check every [minutes]	For performance reasons, this feature only runs periodically, checking which backend user accounts are inactive and disabling / forcing a password reset on them. Here you can define how often it will run. The default is 60 minutes which means that it will run *at most* once every 60 minutes. Other useful values are 1440 (at most once a day) and 10080 (at most once a week).
Backend user groups	Which user groups this feature should apply to? We recommend choosing at the very least the Administrator and Super User groups. If you have other user groups with backend login we recommend you add them as well. If you do not specify any groups, or choose the "Show All Groups" option, Admin Tools will consider users from all user groups which have the Admin Login privilege, as set up in the Global Configuration of your site. Even though you can select user groups without backend access they are NOT taken into account. The user groups list is rendered by Joomla! and it does not provide a way to remove user groups which lack backend access.
Maximum number of days since last login	Users who have not logged into the site for *at least* this many days will be blocked or forced to reset their password. The default is 90 days (three months). Reasonable values are between 30 and 365 days. If you set this to 0 or leave this blank the feature will effectively be disabled.
Login prevention method	What should Admin Tools do with the user accounts which have not logged in for a long time? Block means that the user will be completely blocked from accessing the site. This is implemented by setting the Block User to Yes. The blocked users cannot unblock themselves. A Super User will have to do that by editing the user from the Joomla backend Users, Manage menu item.

Force Password Reset is the recommended and selected by default method. In this case the user account is allowed to log in but they will have to immediately reset their password and log back in before they can do anything on the site. The password reset takes place through Joomla's built in password reset method. It is NOT handled by Admin Tools.

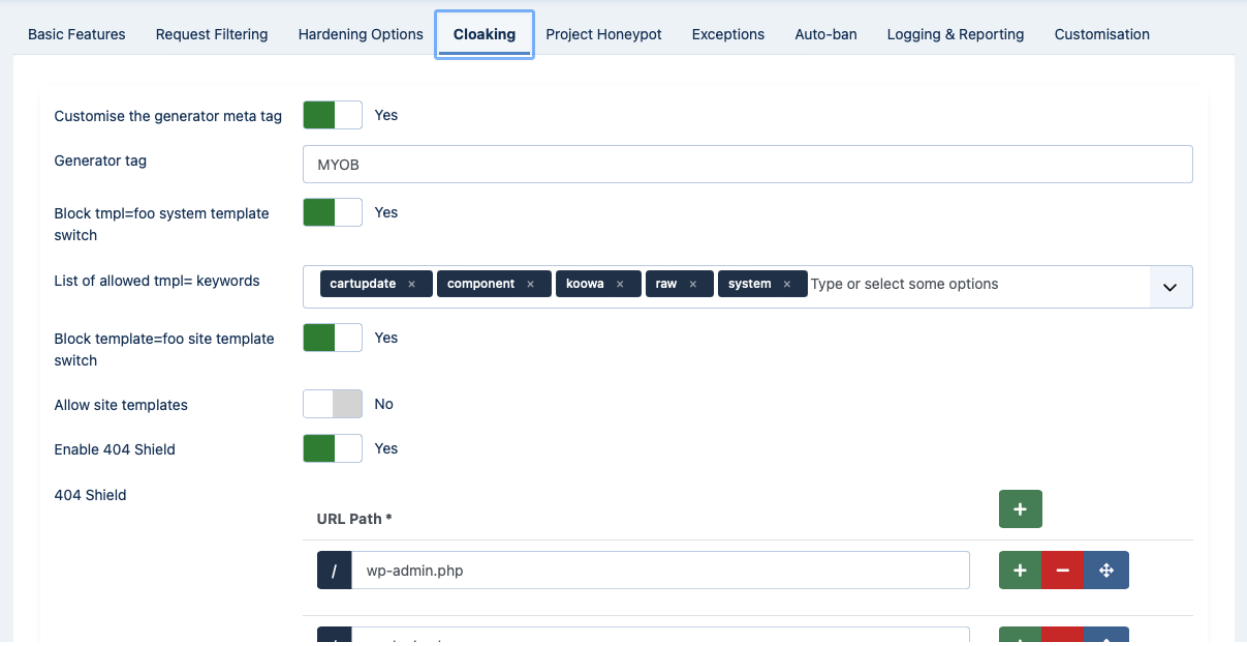
Protected users

Any users you select here are not going to be prevented from logging into the site. We recommend that you add the site owner here. Moreover, if you are building a site for a client, you should add your user account as well. This will let you log into the site to provide technical assistant should your client require it.

It is worth noting that **if Login prevention method is set to Block and Protected Users is empty Admin Tools will NOT block ANY Super Users**, even if they haven't logged in for a time period longer than the specified maximum number of days. This is a precaution against losing all access to the site by accident (if all Super Users get blocked then nobody is left to unblock you). If you have a site with multiple Super Users and use the Block method you MUST specify at least one Protected User for Admin Tools to provide a sensible level of protection against forgotten user accounts.

9.1.4. Cloaking

WAF: Cloaking



The next section is called Cloaking and contains options to allow you to modify the way several features in Joomla! which are frequently exploited by attackers to locate Joomla! sites work. The idea is that potential attackers use automated tools to scan thousands of sites, trying to identify which of them run Joomla! in order to attack them. Using these options will allow you to "cloak" your site against such fingerprinting (scanning) attacks.

Customise generator meta tag

All Joomla! installations set the meta generator tag, a piece of HTML in the header of all pages, to advertise the fact that your site is running on Joomla!. This information is cached by search engines and is exploited by attackers to deduce that your site is running Joomla! when looking for potential targets. Enabling this option allows to set up a custom generator tag.

Generator tag
: Enter the custom content of the generator meta tag. This will be applied on all frontend HTML pages generated by Joomla.

Block tmpl=foo system template switch
: One of the lesser known Joomla! features are its system templates. The value of the tmpl keyword tells Joomla which .php file in the template's folder it will use to render the page. For example, `?tmpl=component` tells Joomla to use the component.php file which renders only the component output, without any modules, menus or other embellishments on the page. Of and by itself this feature is not dangerous. However, hackers have realized that this feature is being abused by badly architectured plugins and components beyond the intended purpose in Joomla itself. This badly constructed third party software expects non-standard values in the tmpl keyword to do something specific, e.g. handle AJAX requests, update a shopping cart etc. The downside is that depending on how this is implemented it may open a security hole, e.g. if the code parsing the tmpl keyword in a third party extension gets confused by certain types of data and executes arbitrary code or does something unintended. For this reason Admin Tools has the Block tmpl=foo system template switch feature which will block any request that does not have one of the expected tmpl keywords for your site.

List of allowed tmpl= keywords
: The list of tmpl keywords which should be allowed of your site, as a comma separated list. At the very least you MUST include system and component, otherwise Joomla! will not work properly. Default value: `component,system,raw,koowa,cartupdate`

  The component, system and raw keywords are defined and used by Joomla itself. tmpl=component tells Joomla to only show the component output, without any modules, menus or other embellishments – however, the template's CSS files are loaded. tmpl=raw has a similar effect to tmpl=component, without loading the template's CSS files at all. tmpl=system is used for displaying error pages. Your site will NOT work properly if you remove any of these keywords from the list of allowed tmpl keywords.

Note

The koowa keyword is only required when you run components based on Nooku Framework a.k.a. Koowa, for example DOCman. According to the Koowa developers' email we received on January 2015 there are two reasons for the use of the koowa keyword:

- The modals which contain full page JavaScript "applications", like the multi file uploader, was breaking on some templates out there because they do weird stuff in their JavaScript. No matter the precautions taken by Koowa there is at least one template out there removing the JavaScript files from the page output because they "looked like JavaScript".
- Frontend edit forms. The Koowa developers also had a lot of problems by using tmpl=component or the normal template in frontend forms. Templates re-define Bootstrap rules, use Bootstrap 3, add weird JavaScript to "enhance" the page that has no job in the component output and so on.

So, basically, they added the custom "koowa" tmpl keyword to work around restrictions imposed by templates. The correct solution would be using tmpl=raw&format=raw but they decided otherwise. Therefore we include this keyword by default. If you are not using any extension powered by Koowa you are advised to remove that keyword from your site.

Note

The cartupdate keyword is currently only used by VirtueMart. For some strange reason its developer does not want to use format=raw for cart updates even though this is the recommended, tried and tested way to do this since Joomla! 1.5. Having had the past experience of trying to discuss best practices with him to no avail we decided to add this keyword by default without even contacting him to propose an alternative. If you are not using VirtueMart please remove this keyword from your site.

Block template=foo site template switch

Another Joomla! hidden feature is the ability to switch between installed templates by passing a special URL parameter called "template". Enabling this option will turn off this hidden Joomla! feature.

Allow site templates

Enabling this option partially overrides the previous option (the blocking of template=foo in the URL). If the template= URL query parameter specifies the name of a template which exists in your template directory, then it will be allowed without the request being blocked.

Important

If you are using the "Send this page by email" icon in your articles and/or multiple templates on your site, you MUST enable this option.

You MUST enable this option if you want your site visitors to be able to use Joomla!'s com_mailto component, i.e. the "Send this page by email" icon in your articles.

Moreover, you must use it on sites which are using more than one template at the same time. What we mean by that is that you can go to Joomla!'s back-end, go to Extensions, Templates and assign any of the installed templates to any number of menu items. When you do that, several components need to append template=*yourDefaultTemplateName* to the URL. This would cause your site to block the request. By enabling this option you prevent these requests from being accidentally blocked.

Enable 404 Shield

Whether the 404 Shield feature should be enabled or not.

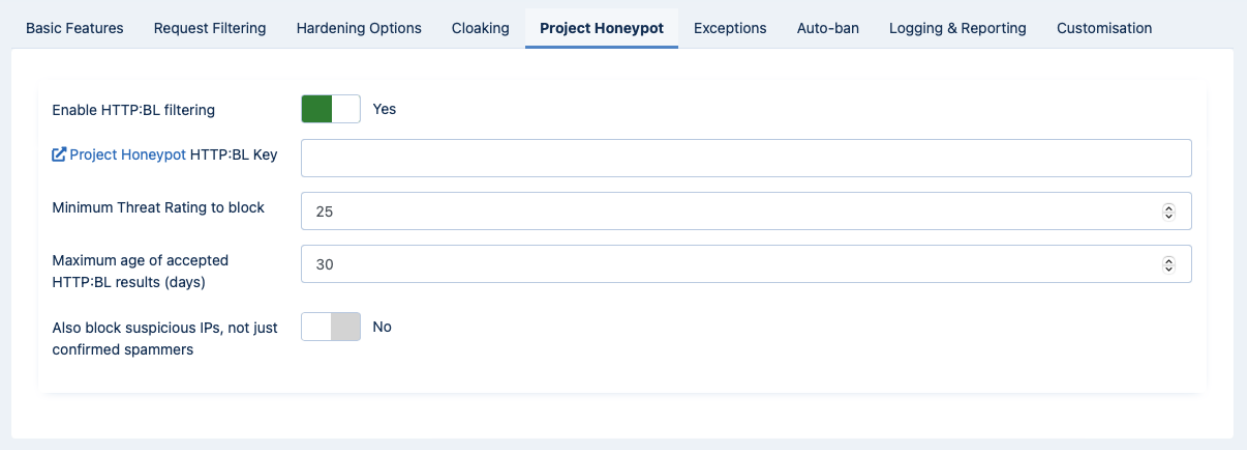
404Shield

This feature 404 will block irregular "Page not found" requests which typically indicate that your site is being targeted by an automatic vulnerability scanner or hacking tool. For example, someone trying to access the folder `wp-admin` on your Joomla site is irregular since that folder is the administration area of WordPress. Since your site is running Joomla it means that the request to your site was very likely malicious, e.g. an automated tool (bot) trying to guess your access credentials by trying various common combinations of usernames and passwords. In this light, the request has to be blocked.

The default list of URLs to be blocked by 404Shield consists of known WordPress-only paths. That's because we know that these URLs cannot be found on a Joomla site and are typically used by automated hacking tools, therefore minimising the possibility of false positives. You can always add more if you want to.

9.1.5. Project Honeypot

WAF: Project Honeypot

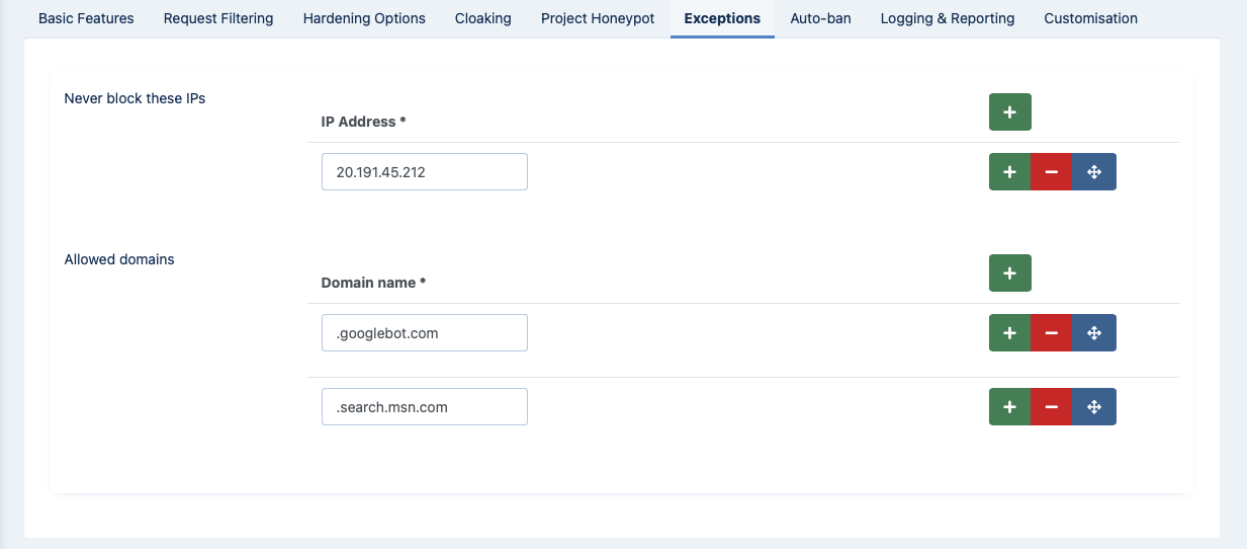


Project Honeypot allows you to integrate with Project Honeypot's spam fighting services. Project Honeypot is a collective effort to detect spammers, email harversters and crackers. Its HTTP:BL service allows participants to query the IP addresses of their visitors and figure out if it is a malicious user behind it. If you enable this feature, Admin Tools will check the IP address of each visitor and, if it is a malicious user, it will block him. You have the following options:

Enable HTTP:BL filtering	Turns the entire feature on and off
Project Honeypot HTTP:BL key	Enter your HTTP:BL key. You can sign up for Project Honeypot and get your key at http://www.projecthoneypot.org/httpbl_configure.php.
Minimum Threat Rating to block (0-255, default 25)	Project Honeypot uses a logarithmic "threat rating" to rank the possibility of a specific IP being a spammer. This options defines the minimum threat level an IP must have before it's blocked. A value of 25 means that this IP has submitted 100 spam messages on Project Honeypot's spam catching honeypots and is usually a safe indication that it belongs to a spammer. Do note that the rating is logarithmic. A value of 50 means 1,000 spam messages and a value of 75 means one million spam messages. Do not set it to values over 50, as you will most likely never block any spammer at all.
Maximum age of accepted HTTP:BL results	Project Honeypot reports when was the last time this IP was caught sending spam messages. The older this is (the higher the age is), the less likely is that this IP is still used by a spammer. You can chose here what will be the maximum reported age that will be blocked. The default value of 30 means that IPs which have submitted a spam message in the last 30 days will be blocked.
Also block suspicious IPs, not just confirmed spammers	Sometimes Project Honeypot is not sure if an IP belongs to a spammer or it's a hapless chap who clicked on the wrong link. In this case the IP is marked as "suspicious". The default behaviour is to not block these IPs. However, if you are receiving a lot of spam it's a good idea to enable this feature and block even "suspicious" IPs. Ultimately, some unfortunate users will be inadvertently blocked, so use this option with caution!

9.1.6. Exceptions

WAF: Exceptions



Sometimes you do not want to block certain IPs or domain names. For example, you don't want to block Google Bot, MSN (Bing) Bot and so on. You can easily add Exceptions from blocking. You can set the following options to prevent Admin Tools from blocking certain IPs and domain names:

Never block these IPs

Enter the IP addresses or address blocks which should never be automatically blocked. You can enter IPv4 and IPv6 addresses in the following formats:

- Single IPv4 or IPv6 address e.g. `127.0.0.1` or `::1`
- IPv4 address range e.g. `127.0.0.1-127.0.255.255`
- IPv4 implied range e.g. `127.0.0.` for the entire 127.0.0.1 to 127.0.0.255 block
- IPv4 or IPv6 CIDR block notation e.g. `127.0.0.0/8`

You may enter a dynamic IP domain name prefixed by the at-sign (for IPv4) or hash-sign (for IPv6). This only applies if you are using a dynamic IP address domain provider (e.g. DynDNS). For example, if you are using DynDNS and your dynamic IP address domain name is example.dyndns.info and resolves to an IPv4 address you can enter `@example.dyndns.info` to always allow your dynamic IPv4 address. Conversely, if your dynamic hostanem resolves to an IPv6 address you can enter `#example.dyndns.info` to always allow your dynamic IPv4 address. Be careful to enter the correct domain name or you may have a delay of up to 30" processing blocked requests.

Tip

If you are using the Exclusive Allow IP List feature to allow access to the administrator section of your site only to specific IPs, these IPs are automatically added to the safe list of IPs which should never be automatically blocked. You do not have to enter them here.

IPs added to this list are fully allowed to do anything. This means that no security measure will be applied against them. Please place only very well trusted IPs in this list! If an attack is launched from this IP, it will not be blocked by Admin Tools!

The default list of IP addresses lists the known good IP addresses of the search bot of the DuckDuckGo search engine: 20.191.45.212, 23.21.227.69, 40.88.21.235, 50.16.241.113, 50.16.241.114, 50.16.241.117, 50.16.247.234, 52.5.190.19, 52.204.97.54, 54.197.234.188, 54.208.100.253, 54.208.102.37, 107.21.1.8

The source of that list of IP addresses is the official DuckDuckBot documentation at https://help.duckduckgo.com/duckduckgo-help-pages/results/duckduckbot/

Allowed domains

If the IP address of the visitor whose request would be blocked resolves to a domain name *ending* in what you enter here they will not be blocked. Effectively, these domain names have a free pass on your site.

Warning

Malicious URLs from these domain names WILL be blocked but a. this will not be logged and b. their IP address will not be automatically blocked by the "Auto-ban Repeat Offenders" feature below. This is done to protect your site against reflected search engine attacks. Let us explain this.

Some hackers try to exploit search engines' eagerness to scan URLs, crafting malicious URLs to your site and putting them on their own sites. Search engines will see them and try to visit them on your site. You are explicitly allowing these search engines as you don't want to lock them out of your site. If the malicious URL wasn't blocked just because the request comes from a seemingly innocent source your site would be instantly hacked. That's why the malicious URLs are still blocked, just not logged or cause IP addresses to be automatically banned.

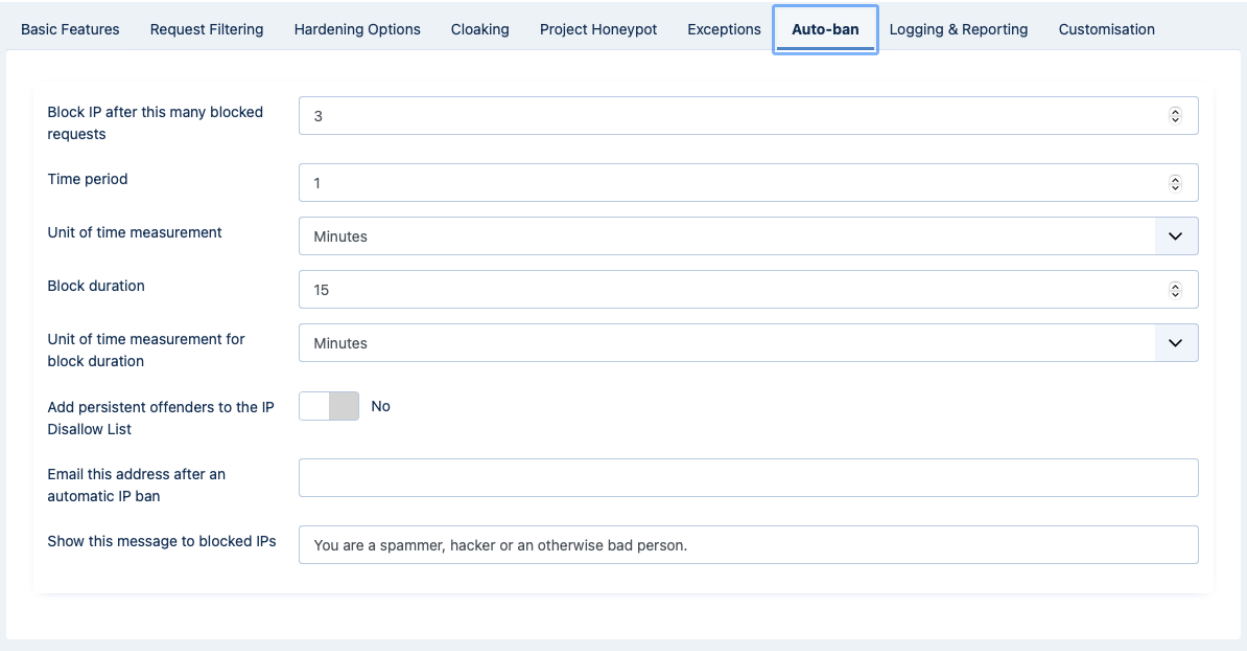
The default list of domain names is `.crawl.baidu.jp,.crawl.baidu.com,.google.com,.googlebot.com,.search.msn.com,.crawl.yahoo.net,.yandex.com` which allows the search engine indexers for Baidu, Google, Bing, Yahoo and Yandex.

The source of this information is the following official documentation URLs of various search engines:

- Baidu https://help.baidu.com/question?prod_id=99&class=0&id=3001
- Google https://developers.google.com/search/docs/advanced/crawling/verifying-googlebot
- Bing https://blogs.bing.com/webmaster/2012/08/31/how-to-verify-that-bingbot-is-bingbot/
- Yahoo https://help.yahoo.com/kb/search-for-desktop/slurp-crawling-page-sln22600.html and analysing server logs (first party page stating all bot activity comes from crawl.yahoo.net was published in 2007 and no longer resolves)
- Yandex https://yandex.com/support/webmaster/robot-workings/check-yandex-robots.html

9.1.7. Auto-ban

WAF: Auto-ban



This feature allows you to automatically and temporarily ban IP addresses which get repeatedly blocked. This can be prove to be an effective measure against malicious users who try to probe your site for vulnerabilities. You MUST enable logging of blocked requests for this feature to work. You can set the following options to define how Admin Tools will behave in those cases:

IP blocking of repeat offenders

When requests from an IP address are blocked a certain number of times within a specified time period, as defined by the next three options, the IP address will be temporarily from accessing the site.

This feature is meant to be used as an additional defence against bots attacking your site. You should keep the Block After time period relatively short (in the range of a few seconds to a few minutes) and the number of detected attacks relative high. Otherwise a number of false positives or more innocuous block reasons such as trating failed logins as a block reason could result in your or your visitors' IP addresses being blocked.

For the same reason you should keep the block time relatively short, between a few minutes to an hour. Otherwise a legitimate visitor blocked accidentally due to false positives will be unable to access your site in a practical amount of time, losing you that site visitor possibly forever.

Block IP after this many blocked requests

When requests from an IP address are blocked at least this many times within the period of time defined by the next two options it will be temporarily blocked from accessing the site. For example, if you set it to 3 attacks in 1 hour, Admin Tools will disallow access from an IP address which got at least 3 of its requests blocked within the last hour.

Time period

The number of blocked requests defined above must occur within this many seconds, minutes, hours or days. You enter the number here; you choose the unit of time measurement in the option below.

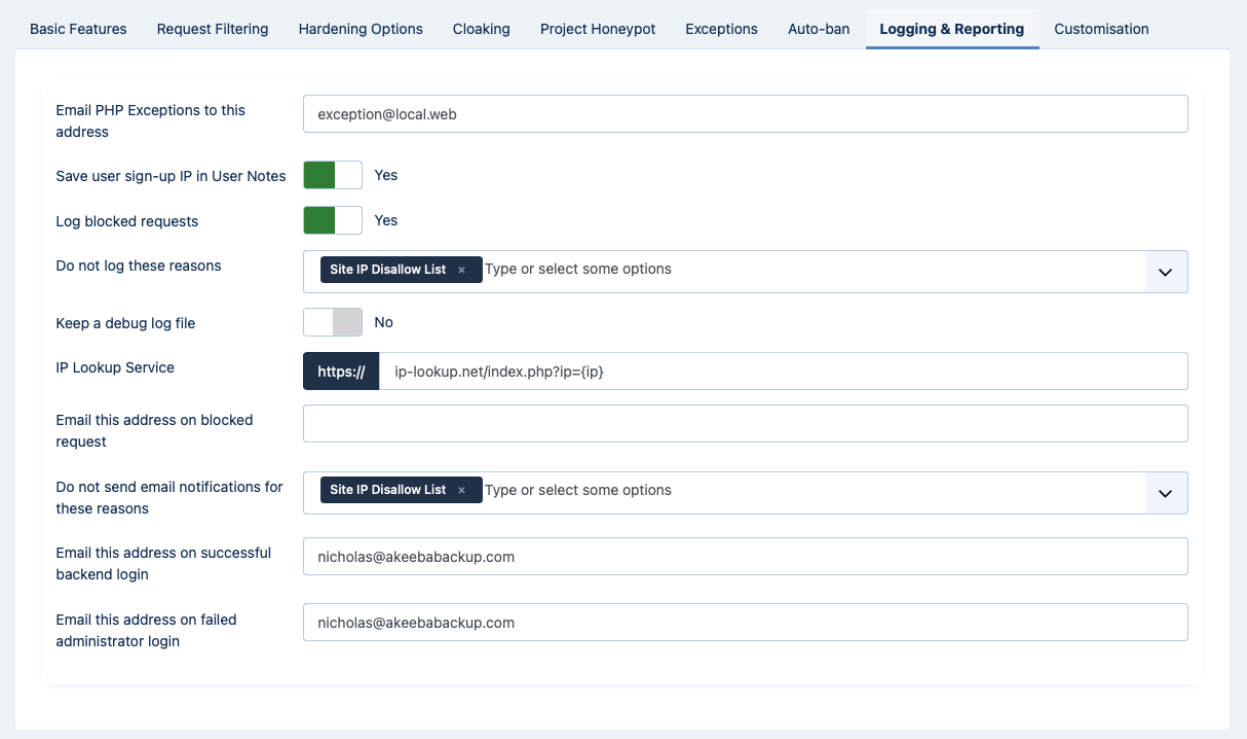
Unit of time measurement

The unit of time measurement for the “Time period” setting above. Choose one of seconds, minutes, days or hours.

Block duration	How long the block will last. For example, setting it to 1 day will block all access from this IP address for a whole day. Enter the number in this field, select the unit of time measurement in the next field.
Unit of time measurement for block duration	The unit of time measurement for the “Block duration” setting above. Choose one of seconds, minutes, days or hours.
Add persistent offenders to the IP Disallow List	If an IP triggers this many auto-bans it will be permanently banned (added to the IP Disallow List) if they are about to be auto-banned again. Make sure that you turn on the IP Disallow List feature by setting Disallow site access to IPs in the IP Disallow List to Yes, otherwise the permanent adding to the IP Disallow List will have no effect.
Permanently disallow IP after this many automatic blocks	When the previous option is enabled, after how many auto-bans an IP will be permanently banned (added to the IP Disallow List).
Email this address if an IP is auto banned	Admin Tools can optionally send you an email when an IP is automatically banned, to the email address entered in this field. This will allow you, for example, to determine if some IP is being regularly blocked, in which case it may be a good idea to place it in the permanent IP black list. Leave this field empty (default) to disable this feature.
Show this message to blocked IPs	Allows you to show a specific message to blocked IP addresses. You may want to explain to the user that his IP was blocked because suspicious activity was detected as originating from his IP address. You can use the special text `[IP]` in all capital letters, without spaces between the brackets and IP, to display the user's IP in the message. This may be useful if someone gets accidentally blocked and asks you to help them.

9.1.8. Logging & reporting

WAF: Logging & reporting



In the Logging and reporting section you can change the way Admin Tools logs and reports various activity items and blocked requests on your site.

Email PHP Exceptions to this address
: Whenever an unhandled PHP exception is raised (ie an error on a database query), Admin Tools will send an email containing all the details (time, file and line raising the exception) for later debugging.

Save user sign-up IP in User Notes
: When enabled, the IP new users signed up from will be stored as User Notes.

> **Important**
>
> This feature is guaranteed to work only when a user registers to your site using the front-end user registration form provided by Joomla!. Users created through the back-end will not have their IP saved as a User Note because it makes no sense to do so (it's an administrator registering the user account on their behalf). Third party components creating new user accounts may also not trigger the plugin event.

Log blocked requests
: It is suggested to keep this option enabled. When enabled, all potential security issues —blocked by Admin Tools— will be logged in the database and made available under the Blocked Requests Log tool. This is required for the automatic IP blocking feature to work.

  Please note that turning off this feature will also disable the debug log file, even if the option below is set to Yes.

Important

When this option is turned off the automatic IP blocking of repeat offenders, automatic adding of IPs to the IP Disallow List and most email notification features will be deactivated.

Do not log these reasons

Blocked requests due to these blocking reasons will not be logged. As a result, IPs getting their requests repeatedly blocked because of this reason will not be automatically banned from your site. Moreover, as there is no log, it will be impossible to tell why someone is being blocked from accessing your site when they trigger one of those reasons.

For a list of what each reason means please consult the list of WAF log reasons. You can start typing or click on on the field to show the list of reasons.

The default setting is empty

Keep a debug log file

It is suggested to keep this option disabled unless you are troubleshooting.

When enabled, Admin Tools will create a file named `admintools_blocked.php` in your site's `administrator/logs` directory (or wherever you have configured your logs directory to be). This contains all the information sent in the request that Admin Tools blocked. **This may include sensitive information such as usernames, passwords and personally identifiable information.** For this reason you must only enable this feature for a limited amount of time when troubleshooting. We may ask you to do this, and send us a copy of the log file, if you ask us for support.

The file has an extension of .php and begins with a PHP die() statement to prevent direct web access if your log directory is accidentally left web accessible. An attacker may try to access the file but all they will get is a blank page.

When you disable that option, the existing log files will be removed once you visit Admin Tools' Control Panel page again.

Do note that your logs directory MUST be writable for the log file to be generated.

Some servers use automated file scanners which will mistakenly flag Admin Tools' log file as a security threat. Because of that they might issue an automated warning to you that your site is hacked, rename / delete the file or prevent web access to your site (put it offline). This is a mistake and does not reflect the truth. Our log file does have an executable extension (.php) and does contain the signatures of hacking attempts (the hacking attempts it stopped from hacking your site!) BUT the hacking attempts signature themselves are NOT executable. In fact, the only reason this is a .php file is so that we can put a PHP die() statement at the top of the file to prevent it from being executable over the web. This information is also printed at the top of the file, in its header. If your host is giving you grief about the log file please show them this documentation page or ask them to actually review the file and read its header. If they still insist that they have to block your site please go to a different host that understands how PHP works and, by extent, is a much safer choice. In the meantime, just disable the Keep a debug log file option.

IP Lookup Service

Admin Tools will provide you with a link to look up the owner of an IP address in the emails it sends you, as well as the Blocked Requests Log and Auto IP Blocking Administrator pages. By default, it uses the ip-lookup.net service. This option allows you to use a different IP lookup service if you so wish.

As of Admin Tools 7, the IP lookup service MUST use HTTPS since you are sending it IP addresses. Doing so over plain HTTP may carry privacy and/or security risks.

Enter the URL of the IP lookup service you want to use in this text box. The `{ip}` part of the URL will be replaced with the IP address to look up. For example, the default URL (for ip-lookup.net) is `http://ip-lookup.net/index.php?ip={ip}`

Email this address on blocked request

Enter one or more email addresses (separated by commas) which will get notified whenever a request is blocked on your site. For example `alice@example.com` for one recipient only or `bob@example.com, charlie@example.net, diane@example.org` for multiple recipients. The email addresses need not be in the same domain name and don't even need to be users of the site itself. Any email address will do.

A "blocked request" is anything which triggers the Web Application Firewall and causes it to block an incoming request to serve a page. This is useful to get an ahead warning in the event of a bot trying to perform a series of attacks on your site.

The contents of the e-mails can be configured using the Email Templates feature in the Web Application Firewall page.

Do not send email notifications for these reasons

Blocked requests caused by these blocking reasons will not result in an email being sent to the email address specified in "Email this address on blocked request".

For a list of what each reason means please consult the list of WAF log reasons. You can start typing or click on on the field to show the list of reasons.

The default setting is empty

Email this address on successful back-end login

Enter an email address which will get notified whenever someone successfully logs in to your site's administrator back-end. If you do not wish to use this feature, leave this field blank. If you enter an email address, every time someone logs in to the administrator area an email will be sent out to this email address stating the username and site name. If you want to send a notification to multiple email addresses separate them with commas, e.g. `alice@example.com, bob@example.net`. The email addresses do not need to be in the same domain and they don't even have to be linked to users of your site.

This allows you to get instant notification of unexpected administrator area logins which are a tell-tale sign of a hacked site. In that unlikely event, immediately log in to your site's back-end area, go to Extensions, Admin Tools and click on the Emergency Off-Line Mode button. This will cut off the attacker's access to the entirety of your site and gives you ample time to upgrade your site and its extensions, as well as change the password (and maybe the username) of the compromised Super Administrator account. For maximum security, after taking your site back on-line, log out, clear your browser's cookies and cache and log in again.

The contents of the e-mails can be configured using the Email Templates feature in the Web Application Firewall page.

Email this address on failed administrator login

Enter an email address which will get notified whenever someone tries to log in to your site's administrator back-end but is denied access. If you do not wish to use this feature, leave this field blank. If you enter an email address, every time someone unsuccessfully tries to log in to the administrator area an email will be sent out to this email address stating the username and site name. If you want to send a notification to multiple email addresses separate them with commas, e.g. `alice@example.com, bob@example.net`. The email addresses do not need to be in the same domain and they don't even have to be linked to users of your site.

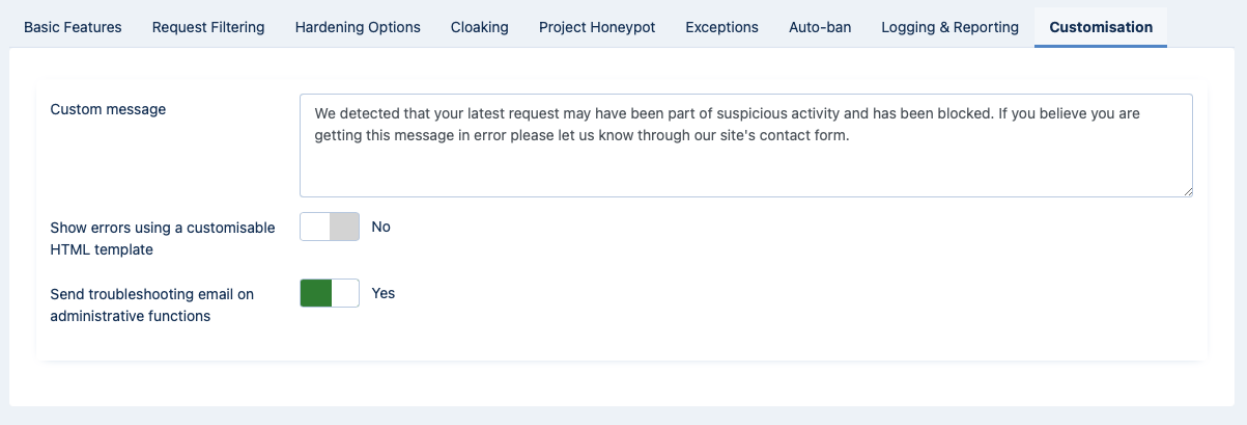
This allows you to get instant notification of unexpected administrator area login attempts which are a tell-tale sign of a hacked site. In that unlikely event, immediately log in to your site's back-end area, go to Extensions, Admin Tools and click on the Emergency Off-Line Mode button.

This will cut off the attacker's access to the entirety of your site and gives you ample time to upgrade your site and its extensions, as well as change the password (and maybe the username) of a potentially compromised Super Administrator account. For maximum security, after taking your site back on-line, log out, clear your browser's cookies and cache and log in again.

The contents of the e-mails can be configured using the Email Templates feature in the Web Application Firewall page.

9.1.9. Customisation

WAF: Customisation



The Customisation section allows you to change the way Admin Tools presents the error message to people who are denied access to the site.

Custom Message

By default, Admin Tools uses a generic message ("We detected that your latest request may have been part of suspicious activity and has been blocked. If you believe you are getting this message in error please let us know through our site's contact form.") when a request is blocked. Considering that this may not be exactly the kind of message you want your visitors to see, we allow you to customise it. Just type in the message to be shown to site visitors when a request is blocked.

Show errors using a customisable HTML template

By default, the Custom Message will be shown using Joomla!'s standard error message page. This is not always desirable, as that page lacks proper styling and admittedly looks very cheesy. When this option is enabled, however, Admin Tools will use a customisable HTML template.

The default HTML template file is located in the `components/com_admintools/tmpl/Block/default.php` file. **DO NOT MODIFY THIS FILE DIRECTLY**! It will be overwritten on each upgrade. Instead, you will have to do a template override. For more information regarding template overrides, please consult Joomla!'s documentation wiki page [http://docs.joomla.org/How_to_override_the_output_from_the_Joomla!_core].

Send troubleshooting email on administrative functions

Some Admin Tools administrative functions have the potential to make your site behave in a way you didn't expect or even lock you out of your site. This can happen because of a misunderstanding of what a security feature does, a misconfiguration or –more rarely– a browser or server mangling the configuration you are submitting to Admin Tools. We understand that this leads to frustration and occasional panic as you have no idea what happened and how to fix it.

For this reason Admin Tools will automatically send you an email with troubleshooting instructions every time you take any administrative action which might result in getting locked out of your site or your site not working properly. These actions include applying the

initial configuration with the Quick Setup Wizard, changing the Web Application Firewall configuration, applying administrator password protection or saving a new .htaccess, web.config or NginX configuration file through the relevant Admin Tools features.

The email explains what change took place and includes links to our troubleshooter documentation which can help you get your site back to a working state. Moreover, it has a reminder about getting support from us if all else fails.

The email is sent only to the email address recorded on the user account logged into Joomla who initiated this change. It is not sent to other Super Users, Administrators or, in general, any other email address. Also note that if you have set Receive system email to No in your Joomla! user profile you will not receive this email.

This option can be used to turn off this feature for all administrator users with access to Admin Tools, regardless of their Receive system email status. We recommend leaving this option enabled unless you are absolutely sure you know what you're doing and you're confident you can find your way to the troubleshooter documentation on your own.

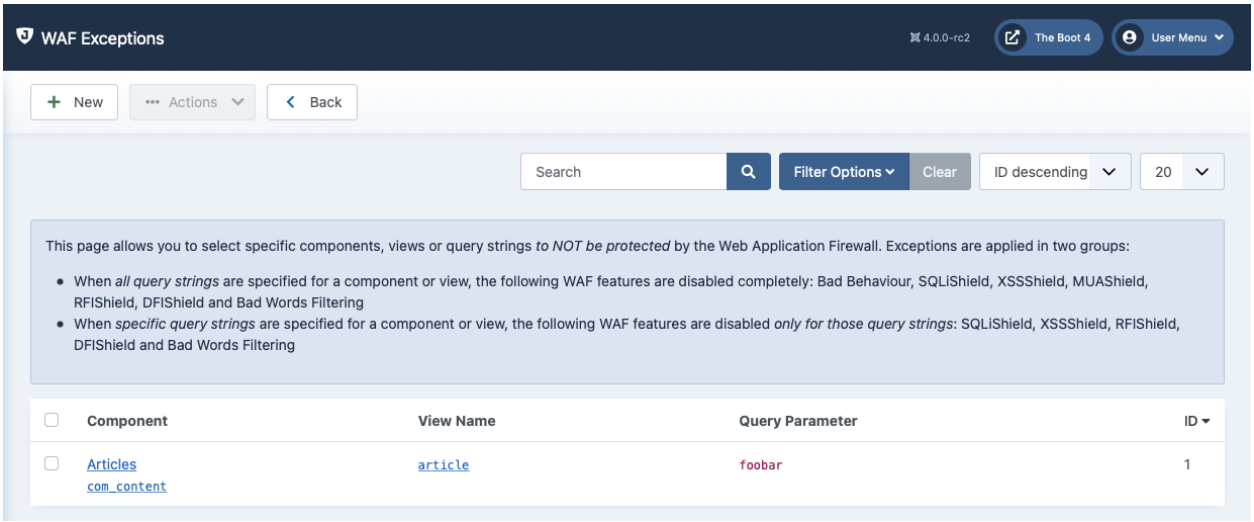
9.1.10. Troubleshooting (I got locked out of my site)

It's possible to accidentally lock yourself out of the administrator area, especially when using the Exclusive Allow IP List or IP Disallow List options of the Web Application Firewall. The easiest way to work around this issue is using an FTP application or your hosting control panel's File Manager to rename a file.

Go inside the `plugins/system/admintools/services` directory on your site. You will see a file named `provider.php`. Rename it to `provider-disable.php`. This will turn disable the Web Application Firewall from executing and you can access your site's back-end again. After you have fixed the cause of your issue remember to rename `provider-disable.php` back to `provider.php`, otherwise your site will remain unprotected!

9.2. WAF Exceptions

WAF Exceptions

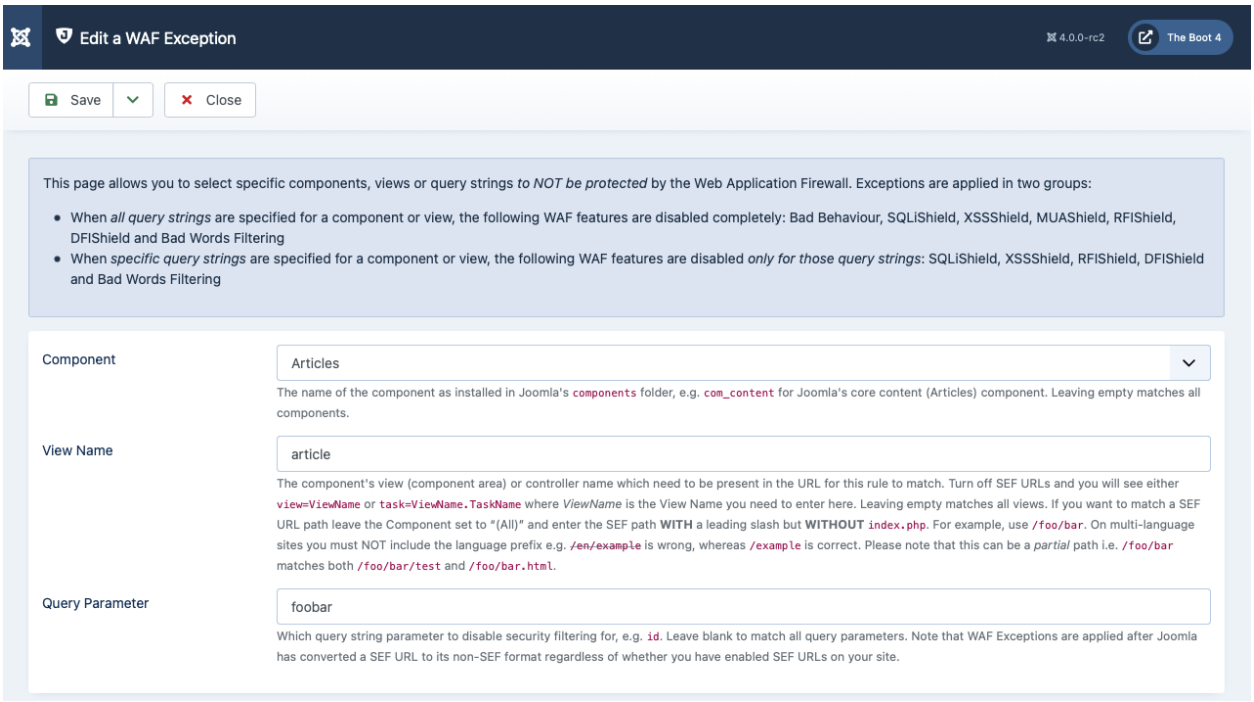


This page allows you to configure exceptions to the WAF filtering rules. Some components are designed to properly and safely parse and use data which triggers WAF protection rules. Most usually, a component accepts an absolute path to files on your server or can parse complex data which normally trigger WAF's filters. Without any exceptions set, these components would be blocked and you wouldn't be able to properly use your site. While you could disable

the entire WAF feature which got in your way, this would also end up degrading the security of your site. Using the WAF Exceptions view you can fine tune which components, views and query parameters are in the "safe list" and should never be blocked.

WAF Exceptions is a very useful and powerful tool. It's also possible that you apply too many exceptions, opening potential security wholes in the firewall. Be very cautious when using it. Please keep in mind that when you add an exception, WAF is COMPLETELY TURNED OFF for all requests matching the exception. If you apply a too broad exception you will be deteriorating your site's security to the level it was before installing Admin Tools.

WAF Exception



WAF Exceptions are defined by specifying a combination of three things:

- *Component*. Which component the exception applies to. If you want to apply the exception to all components, no matter what, leave this blank (“– Component –”).

- *View*. The component's view (component area) or controller name which need to be present in the URL for this rule to match. Turn off SEF URLs and you will see either view=ViewName or task=ViewName.TaskName where ViewName is the View Name you need to enter here. Leaving empty matches all views. If you want to match a SEF URL path leave the Component set to “(All)” and enter the SEF path WITH a leading slash but WITHOUT index.php. For example, use /foo/bar. On multi-language sites you must NOT include the language prefix e.g. /en/example is wrong, whereas /example is correct. Please note that this can be a partial path i.e. /foo/bar matches both /foo/bar/test and /foo/bar.html.

Important

Due to the way Joomla! works, if you are using Joomla!'s SEF URLs it is possible that WAF Exceptions will not work with some components. In this case, change the ordering of the System - Admin Tools and your SEF router plugins so that the SEF router plugin is published BEFORE Admin Tools' plugin. This way Admin Tools will not be able to protect your site against potential vulnerabilities in your SEF component, but it will be able to apply WAF Exceptions even when SEF URLs are turned on.

- *Query Parameter*. Everything after the question mark in a non-SEF URL is called the URL query. You will see a lot of key/value pairs, like `id=1`, `category=1:test` and so on. The word at the left hand side of the equals sign is called the *Query Parameter*. The same-named parameter in WAF Exceptions allows you to target a very specific query parameter. If you leave it blank, all query parameters will be matched.

Warning

You can not leave all three options blank. That would match all components, all views and all query strings or, in other words, EVERY PAGE you access. This would imply that WAF would be effectively turned off. Admin Tools detects an attempt to do that and won't allow you to perform such a change.

Understanding WAF exceptions

The best way to understand WAF exceptions is by some practical examples.

Whole-component exception. Set component to `JCE Editor`, leave view and query parameter empty. This tells WAF that if it sees a request for JCE's utility component (com_jce) is should turn off WAF no matter which view or which query parameters are set. Essentially, WAF is turned off for the entire JCE component.

Excepting a single component's view. Let's say we want to disable WAF for all front-end logins to avoid a complex password throwing a 403 error to our users. Front-end logins are handled by com_user's login view. So just set component to `Users`, view to `login` and leave the query parameter blank. WAF is now disabled for the login/logout page of your site.

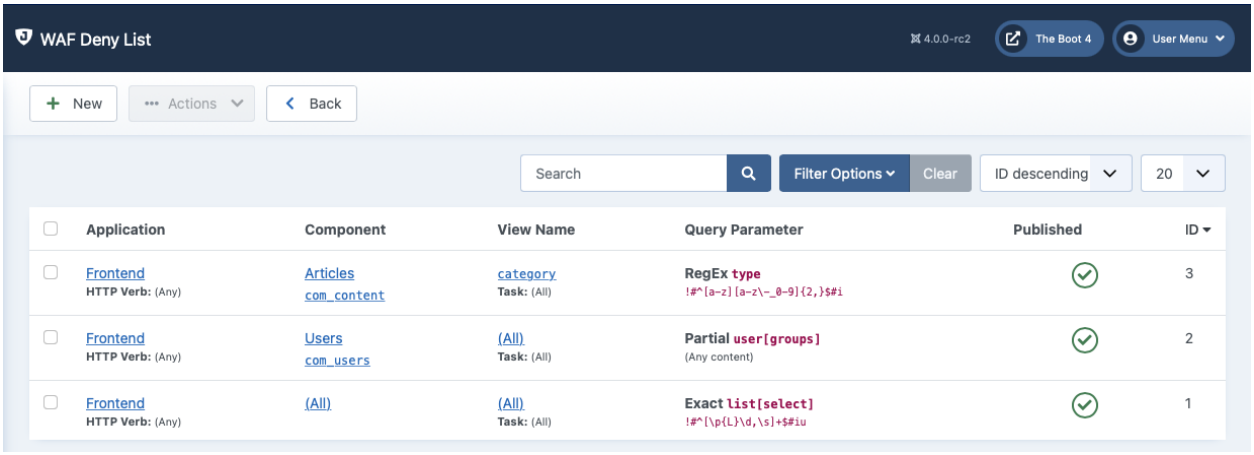
Excepting a query parameter of a specific component and view. Let's say we have a com_foobar component whose test view accepts a pass parameter. Strong passwords may accidentally trigger WAF. Just create a new exception where component is `Foobar`, view is `test` and query parameter is `pass`. WAF will not deal with that specific query parameter on that specific component and view, but will be triggered by unsafe content passed in any other query parameter on that particular view.

Excepting a query parameter across all components and views. Let's say that you see a lot of 403s in your site because various components use a password query parameter to accept passwords and, as we mentioned above, complex passwords can trigger WAF. Instead of hunting down all the views across all components, you can simply leave component and view empty and set the query parameter to `password`. From now on, when WAF sees a password parameter coming into Joomla! it will not try to apply its protection filters against it. If other query parameters come in with the user request they will be filtered and, if they contain unsafe content, the request will still be blocked.

9.3. WAF Deny List

Sometimes vulnerabilities in older versions of Joomla! and its extensions do not rely on maliciously crafted data but holes in the validation of perfectly normal, innocent-looking data. For example, a well-known e-commerce extension for Joomla! had a vulnerability several years ago which would allow an attacker to create a Super Administrator account by passing an undocumented (and unfiltered) parameter in the new client account creation form. The only way to protect against this kind of attacks is being able to block requests which contain the sort of key-value pairs involved in these vulnerabilities. This can be accomplished with the WAF Deny List.

WAF Deny List



WAF Deny List rules are defined by specifying a combination of a few things.

In order to better explain this, please consider the sample URL `http://www.example.com/index.php?option=com_example&view=foo&task=bar&badidea=oops` Let's consider that we want to block the badidea=oops, badidea=oops1 and so on because if the value of the "badidea" parameter begins with "oops" the component com_example will do something dangerous, e.g. give the attacker access to all our data.

- **Enabled**. If you want to temporarily disable a deny list rule when troubleshooting your site you can simply set the Enabled field to No.

- **Application**. Joomla! 4 has *three* applications: the public frontend (the site your visitors see), the administrator backend (where you manage your site) and the API application which handles all URLs beginning with /api. By default, WAF Deny List rules apply only to the frontend of your site. You can choose to apply them in the backend of your site, the API application, or all of the above.

- **HTTP Verb**. The HTTP verb applicable to the request. The most common are GET (access a URL) and POST (submit a form). If you're not sure leave the empty option (three dashes) to have the rule apply to all verbs.

- **Component**. The name of the Joomla component this rule matches. Leaving empty (“– Component –”) matches all components.

- **View Name**. The view of the component which will be filtered. If left blank the rule will apply to all views of the component specified in the rule. In a non-SEF Joomla! URL this is the value of the *`view`* query parameter (and before the first ampersand following it, if any). For example, in the sample URL this is `foo`

  Components using the classic Joomla! MVC might use a different notation, like `index.php?option=com_foobar&task=foo.bar&badidea=oops` instead of the example URL we noted before. Note the `task=foo.bar` part; its value (foo.bar) is a composition. The part to the left of the dot (item) is the View and the value to the right is the Task.

- **Task**. The task of the component which will be filtered. If left blank the rule will apply to all tasks of the component and view specified in the rule. In a non-SEF Joomla! URL this is the value of the *`task`* query parameter (and before the first ampersand following it, if any). For example, in the sample URL this is `bar`

  The note about components using the classic Joomla! MVC applies here as well. If the task has a dot in it then the part to the left of the dot MUST be placed in the View field and the part to the right of the dot MUST be placed in the Task field.

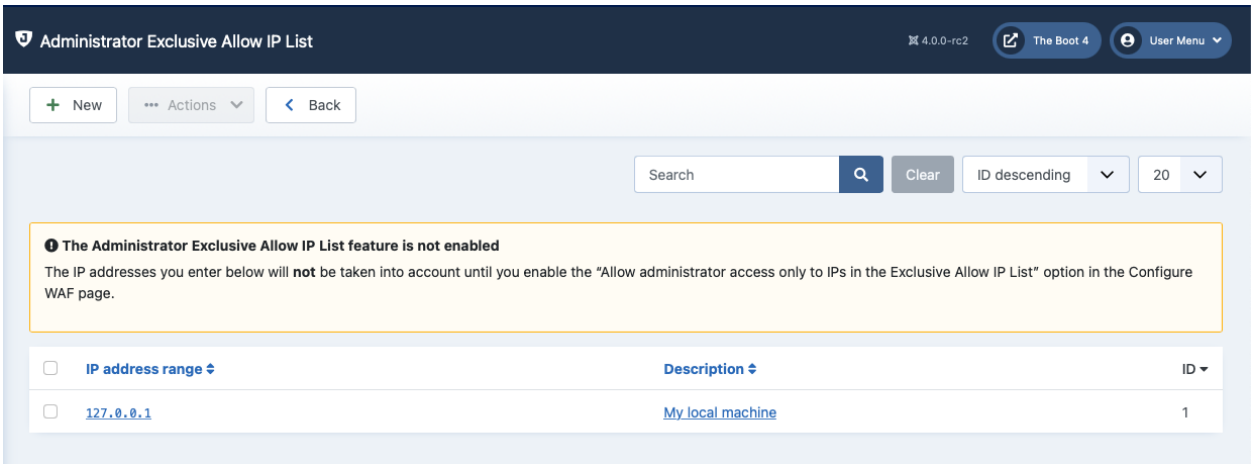
- **Query Parameter filter type** and Query Parameter. Here you can specify the name of the query parameter which will be blocked. This is the name of the parameter after the ampersand and before the equals sign. In our sample URL it is `badidea` You have three ways to define it:
  - **Exact**. What you enter is the exact name of the query parameter. If you enter `badidea` the rule will filter badidea but not badidea1, badideamister or thisisabadidea.
  - **Partial**. What you enter is part of the name of the query parameter. If you enter `badidea` the rule will filter badidea, badidea1, badideamister and thisisabadidea.
  - **Regular Expression**. What you enter is a Regular Expression. For example, if you enter `/idea$/` the rule will filter badidea and thisisabadidea but NOT badidea1 or badideamister.
- **Query content**. Enter a regular expression which will be used to match the value of the query parameter, i.e. what follows the equals sign after the query parameter name and before the first ampersand after it. In our example we'd need to use `/^oops/` to filter all values beginning with "oops". If you leave it empty than any value will be matched by this rule.

Note that it is a very bad idea using a Query Parameter which contains the text option, view, task and Itemid as these are Joomla! reserved keywords. If you create such a rule we can't guarantee what the results will be.

When using Partial and Regular Expression matches be very careful not to filter innocent query parameters. For example, a partial match on id will also block Itemid which is a reserved Joomla! keyword that's internally appended to all URLs of your site. If you still didn't understand this: doing a partial match on id and an empty RegEx for query content will block everyone from accessing any page on your site! If this happens you can rename the plugins/system/admintools folder to admintools-noload (this will prevent Joomla! from loading the System - Admin Tools plugin, therefore disabling Admin Tools' protection), go back to Admin Tools, fix your rule and rename the folder back to admintools to re-activate Admin Tools protection.

9.4. Administrator Exclusive Allow IP List

The Exclusive Allow IP List management page

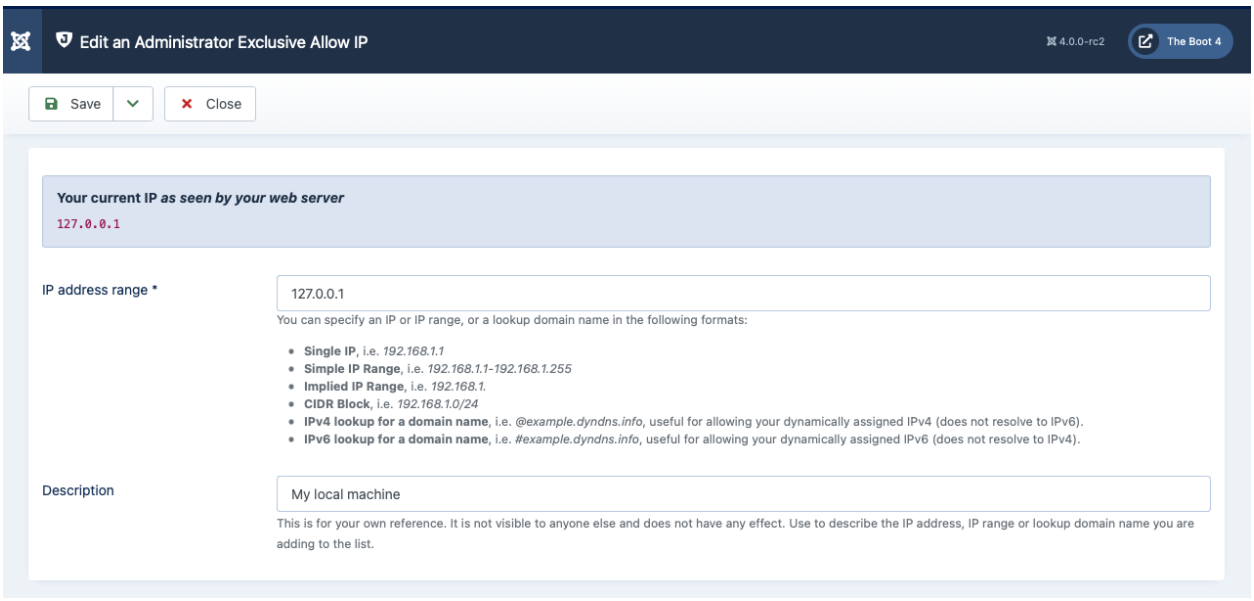


This page allows you to manage the Exclusive Allow IP List, defining the list of IPs or IP blocks which have access to your site's administrator area. An IP in this list is not granted automatic Super User privileges. You still need to log into Joomla. What this option does is that only IPs in the Exclusive Allow IP List will see the administrator login page and will be able to access pages in the backend administrator area. Any IPs outside the list will not be allowed to access any backend administrator area page, including the login page.

The management is done using the standard Joomla! toolbar buttons. Clicking on an entry, or checking its box and clicking on Edit will allow you to edit the entry. Clicking on the New button allows you to add an IP/IP range. Checking one or several items in the list and clicking on Delete will remove them from the list.

The Edit/Add page looks like this:

The Exclusive Allow IP List editor page



Tip

You current IP address is displayed right above the edit box. Make sure that is the first to include so that you do not lock yourself out of your site's administrator area!

In the IP Address Range box you can enter an IP or IP range in one of the following ways:

- A single IP, e.g. 192.168.1.1
- A human readable block of IPs, e.g. 192.168.1.1-192.168.1.10
- An implied IP range, e.g. 192.168.1. for all IPs between 192.168.1.1 and 192.168.1.255, or 192.168. for all IPs between 192.168.0.1 through 192.168.255.255.
- A CIDR block [http://en.wikipedia.org/wiki/Classless_Inter-Domain_Routing], e.g. 192.168.1.1/8. If you don't know what this is, forget about it as you don't need it.
- A Subnet Mask [http://en.wikipedia.org/wiki/Subnetwork] notation, e.g. 192.168.1.1/255.255.255.0
- A dynamic IPv4 domain name prefixed by the at-sign. This only applies if you are using a dynamic IP address domain provider (e.g. DynDNS). For example, if you are using DynDNS and your dynamic IP address domain name is example.dyndns.info and resolves to an IPv4 address you can enter `@example.dyndns.info` to allow your dynamic IPv4 address. Be careful to enter the correct domain name or you may have a delay of up to 30" processing backend login requests and blocked requests. Please note that using the at-sign method ONLY works with IPv4 addresses. This is a limitation of PHP itself.
- A dynamic IPv6 domain name prefixed by the hash-sign. This only applies if you are using a dynamic IP address domain provider (e.g. DynDNS). For example, if you are using DynDNS and your dynamic IP address domain name

is example.dyndns.info and resolves to an IPv6 address you can enter `#example.dyndns.info` to allow your dynamic IPv6 address. Be careful to enter the correct domain name or you may have a delay of up to 30" processing backend login requests and blocked requests. Please note that using the hash-sign method ONLY works with IPv6 addresses. This is a limitation of PHP itself.

Do note that Admin Tools supports IPv4 and IPv6 (if your server supports IPv6) for any form of IP you enter yourself (single IP, human readable block, implied IP range, CIDR block and subnet mask notation).

Please pay attention to the differences between the at-sign and hash-sign notations' meanings. @something is IPv4 (e.g. 192.168.1.4) whereas #something is IPv6 (e.g. ffff::5678:90ab). Do not use the at-sign for domains resolving to an IPv6 address or the hash-sign for domains resolving to an IPv4 address. Mixing this up can lead to long delays in page loads and / or being unable to access your site. Please keep in mind that the two different methods are required due to the way PHP works. They cannot be merged into a single method because that would considerably slow down every page load of your site.

Tip

You can use the Save & New to quickly add multiple entries without having to go back to the administration page and click on New all the time.

Notes about using Dynamic IP Address Domain Names

Ideally, you should only use this feature if the IP address you are using to connect to the Internet never, ever changes. This is called a "static IP address" and it's usually an optional, extra cost, feature with most Internet service providers. Please note that having a dynamic DNS service, such as those provided by Dyn.com, is the exact opposite from having a static IP address: dynamic DNS services frequently update a domain name to point to your ever changing IP address.

While Admin Tools makes it possible to use a dynamic DNS for allowing access by IP address it may be problematic for two reasons. First, it's terrible for performance as a DNS resolution must be done for every page load of your site where the list of allowed IP addresses must be read. This is any attempt to access the administrator login page while logged out of the administrator and every time a request is blocked. If your server does not cache IP resolution locally this can slow your site down considerably.

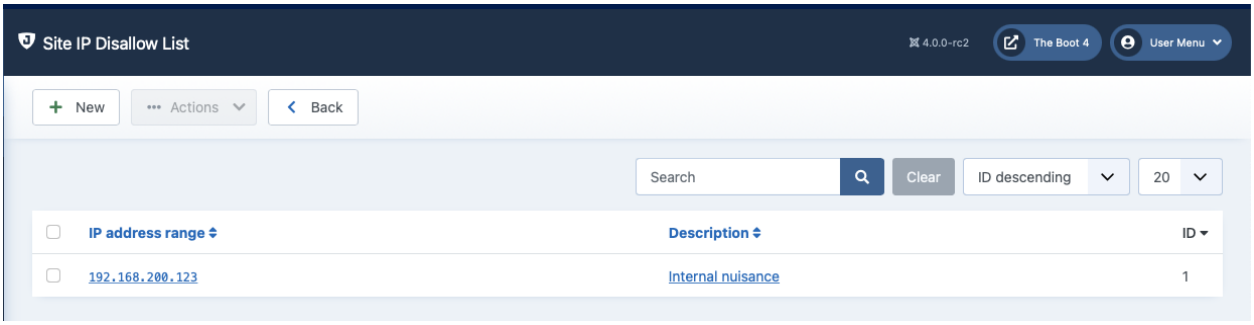
Furthermore, all dynamic IP providers have a default timeout for the dynamic DNS entries varying from 1 minute to 1 hour. If your IP changes within that period your server might be "blind" to the change. The same thing can happen if your dynamic IP updater (typically running in your router or NAS firmware) fails to update the dynamic DNS provider with your new IP address. At best this will be an inconvenience because you cannot access your site's administration until your dynamic DNS provider is updater and your server "sees" the new IP address for that DNS entry. At worst, this can be initiated by a targeted attack to lock you out of your site while the attacker exploits a different path to gain access to your site, leaving you helpless.

Finally, bear in mind that you should never use this feature if you expect to have to access your administrator area from an Internet connection with an unpredictable IP such as a public WiFi hotspot, a satellite Internet connection (e.g. those used in ships, airplanes and remote research stations) or a mobile broadband connection (including mobile-network-assisted Internet routers, even if your ISP is assigning a static IP address to your main, wired, Internet connection). **DO NOT, EVER, ALLOW THE IP ADDRESS OF A PUBLIC, SHARED CONNECTION! YOU WILL GET HACKED!**

For the observant reader, we listed mobile broadband connections together with shared connections. This is not an oversight. Mobile Internet connections tend to recycle IP addresses far faster than their fixed (landline, fiber, cable, ...) counterparts. This is largely because of the ephemeral nature of the connection and the frequent hopping between areas of coverage and areas of non-coverage. Because of the fast rate of IP address recycling, using them for allowing ranges from very impractical to potentially dangerous (e.g. if an advanced attacker uses a malicious femptocell to launch a man-in-the-middle attack).

9.5. Site IP Disallow List

The IP Disallow List management page



This page allows you to manage the IP Disallow List, defining the list of IPs or IP blocks which do not have access to your site. The management is done using the standard Joomla! toolbar buttons. Clicking on an entry, or checking its box and clicking on Edit will allow you to edit the entry. Clicking on the New button allows you to add an IP/IP range. Checking one or several items in the list and clicking on Delete will remove them from the list.

Do not overdo it with disallowing IP addresses!

Contrary to popular belief, you should not manually disallow every single IP which appears to be attacking your site. This will have unintended consequences which work against your site and offer no additional protection.

First of all, not all detected attacks are actual attacks. Keep in mind that Admin Tools' Web Application Firewall, like every other WAF solution out there, is using a set of rules to determine the probability of a request being part of an attack and block it if it crosses a certain threshold. This means that there are a few cases of legitimate requests being mistakenly treated as attacks (false positives). This can happen when, for example, a user's browser keeps inserting the wrong password in the login form and the user not noticing and keep retrying to log in until they get blocked. You don't want to permanently disallow access to that client of yours, now, do you?

Furthermore and most importantly the IP an attack to your site seems to come from is most likely not the IP address of the attacker himself. Even a semi-decent, wanna-be hacker would never use his home's Internet connection to launch an attack. That would be the equivalent of a burglar leaving his driver's license in the house he robbed. Instead, hackers use hacked devices (from a PC to a smart lightbulb and everything in between) of innocent people to launch their attacks from. Therefore the IPs you see attacking you and are tempted to block are innocent people. These are your potential clients. You don't want to block them.

Moreover, IPs are seldom static. They are dynamic. Most ISPs own a bunch of IP addresses. When your router connects to the Internet it is assigned a random address from that bunch. Many ISPs push that further, allocating an IP address for a short time period (usually 1 to 12 hours) and assign you a different, random IP when that allocation expires. This is done for several performance and business reasons, but what you should remember is that the IP that attacks you today will most likely be assigned tomorrow to your potential client. You do not want to block them!

Finally, there's the performance aspect of IP blocking. Every time someone connects to your site, on every single page load, Admin Tools has to check their IP address against each and every entry of the disallow list. Every entry of the disallow list adds a bit of processing time on every page load. In most cases 50 to 100 blocked IPs will not have a severe impact on your page loading speed. Anything above that threshold has a measurable impact on your site's performance. Your site loads slower for everybody. Search engines pick that up and penalize your slow site by burying it dozens of spots lower in search rankings.

Essentially, the more disallowed IPs you add the more potential clients you lose.

This leaves us with the question of why this feature exists and how you should deal with disallowing IP addresses.

There is a small, but large enough to be annoying, percentage of attacks originating from wanna-be hackers who use the same IP address to attack you over and over again. Usually they're running a dumb script with no error handling. Therefore even when Admin Tools blocks them automatically they keep trying and trying. The best thing you can do is, of course, disallow their IP. Luckily, Admin Tools can do that for you! Just make sure that you enable the automatic IP banning and the permanent IP banning of repeat offenders in the Configure WAF page. Admin Tools will first issue a temporary ban against IPs which seem to be attacking your site. If they are persistent it will add them to the IP Disallow List. This automatic management yields the best results for both performance and security.

So why do we have the IP Disallow List feature, again? Mostly to manage the automatically disallowed IP addresses and to allow power users to add their own IPs which they do not want to access the site for reasons beyond security. So do yourself a favor and **do not manually disallow IP addresses**! Managing disallowed IPs manually is a *Terribly Bad Idea*.

Using the Site IP Disallow List

The Edit/Add page looks like this:

The IP Disallow List editor page

Tip

You current IP address is displayed right above the edit box. Make sure that you do not include it so that you do not lock yourself out of your site's administrator area!

In the IP Address Range box you can enter an IP or IP range in one of the following ways:

- A single IP, e.g. 192.168.1.1
- A human readable block of IPs, e.g. 192.168.1.1-192.168.1.10
- An implied IP range, e.g. 192.168.1. for all IPs between 192.168.1.1 and 192.168.1.255, or 192.168. for all IPs between 192.168.0.1 through 192.168.255.255.
- A CIDR block [http://en.wikipedia.org/wiki/Classless_Inter-Domain_Routing], e.g. 192.168.1.1/8. If you don't know what this is, forget about it as you don't need it.

- A Subnet Mask [http://en.wikipedia.org/wiki/Subnetwork] notation, e.g. 192.168.1.1/255.255.255.0

Do note that Admin Tools supports IPv4 and IPv6 (if your server supports IPv6).

Tip

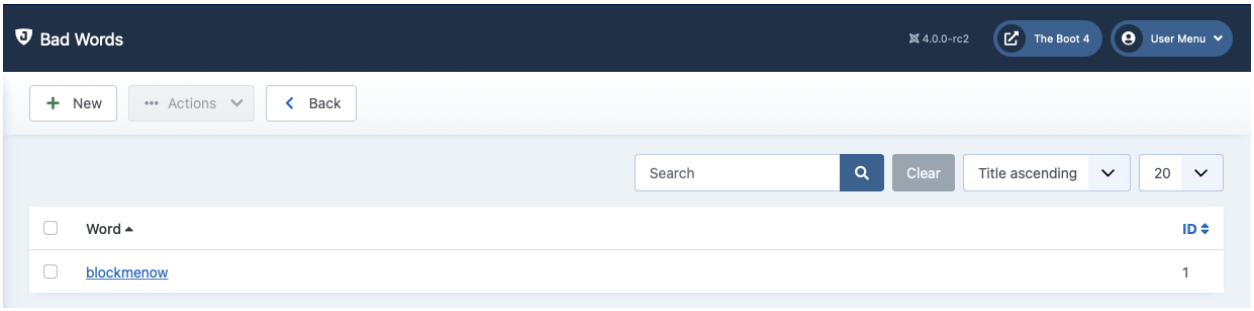
You can use the Save & New to quickly add multiple entries without having to go back to the administration page and click on New all the time.

Note

If you want to unblock someone who got their IP inadvertently blocked you will have to remove all records belonging to their IP address in FOUR (4) places: Site IP Disallow List, Blocked Requests Log, Auto IP Blocking Administration and Auto IP Blocking History.

9.6. Anti-spam Bad Words

The Bad Words management page



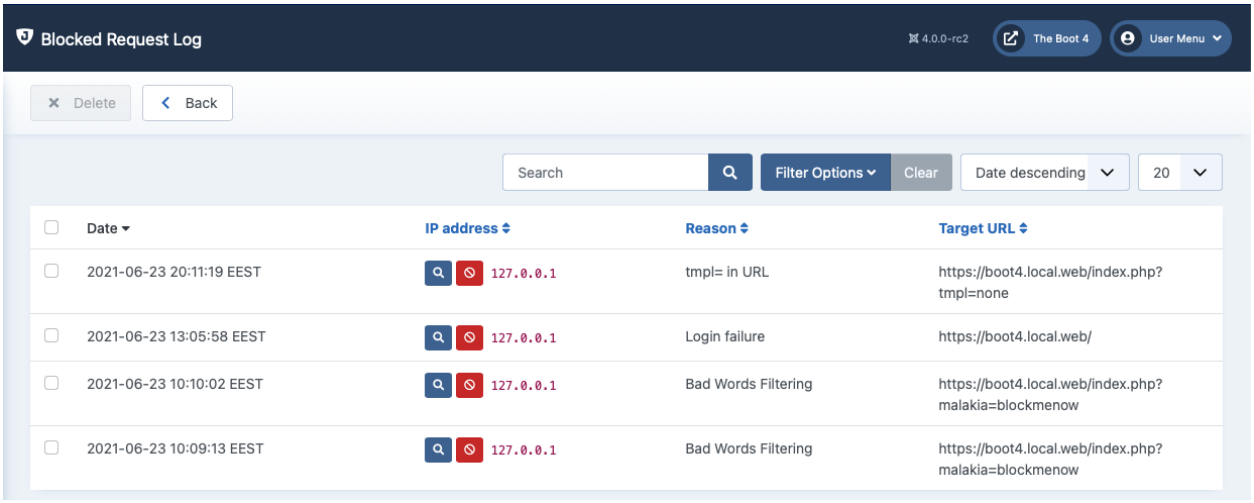
This page allows you to manage the list of Bad Words. Their use will be forbidden on the site. If a query contains one of those words, it will result in a 403 error and it will optionally be logged in your Blocked Requests Log. You can use the standard Joomla! toolbar buttons to administer the list. All words are case insensitive, which means that they will be filtered no matter if they appear in lowercase, uppercase or mixed case in the request.

Note

Some servers already include a server-side filter to avoid common spam words. If you receive an error — usually a 403 error or an error noting that you have an invalid request— while trying to save a word, do not panic. It's your server's filter kicking in. Just omit including the word you just tried to include, as it is already filtered very effectively by your server!

9.7. Blocked Requests Log

The Blocked Requests Log viewer page



Very often you will need to know why a request got blocked. This can be useful when tailoring the protection of your site, doing some troubleshooting about something not working in the frontend of your site or trying to help a client or visitor who seems to be blocked all the time. This is where the Blocked Requests Log comes to help you.

This page shows you the list of blocked requests, from the most recent to the oldest one. Each blocked requests displays the date and time it got blocked, the IP address it appeared to come from, the blocking reason and the URL the request was made against.

Next to each IP you will see two buttons. The first button opens a new tab or window with the IP lookup service you have configured in the Web Application Firewall configuration page. This lets you get some more insight.

The button next to that allows you to add or remove the IP address for the Site IP Deny List. It is generally a bad idea doing that yourself except in *extreme* circumstances, e.g. the same IP bombarding your site at a very high rate. Please read the documentation of the Site IP Deny List to understand why you should be adding every IP address you see here in the Site IP Deny List.

Note

If you want to unblock someone who got their IP inadvertently blocked you will have to remove all records belonging to their IP address in FOUR (4) places: Site IP Disallow List, Blocked Requests Log, Auto IP Blocking Administration and Auto IP Blocking History. Alternatively, use the Unblock IP button in the Web Application Firewall control panel page in Admin Tools.

9.7.1. List of blocking reasons

The block reasons, listed in the log and optionally sent to you by email are the following. The "Code" is what you need to enter in the "Do not log these reasons" or "Do not send email notifications for these reasons" options in WAF configuration to prevent these blocked requests from being logged or trigger an email respectively.

404 Shield — Code: `404shield`

See the Configure WAF page, 404 Shield. The request was blocked by Admin Tools.

Admin Query String	Code: `adminpw` Someone tried to access your site's administrator section but he didn't provide the secret URL parameter. Admin Tools blocked him and prevented him from seeing the login page at all.
Admin Exclusive Allow IP List	Code: `ipwl` Someone tried to access your site's administrator section but his IP was not in the Administrator Exclusive Allow IP List. Admin Tools blocked him and prevented him from seeing the login page at all.
Site IP Disallow List	Code: not applicable Someone tried accessing the front- or back-end of your site but his IP is in the IP Disallow List. Admin Tools blocked him and didn't allow him to see the content of your site.
SQLi Shield	Code: `sqlishield` See the Configure WAF page, SQLiShield protection against SQL injection attacks. The attack was blocked by Admin Tools.
Bad Words Filtering	Code: `antispam` The request contains one of the Bad Words you have defined and was blocked by Admin Tools.
tp=1 in URL	Code: not applicable Only for Joomla! 1.5, see the respective option in the Configure WAF page. The attack was blocked by Admin Tools.
tmpl= in URL	Code: `tmpl` See the Configure WAF page, Block tmpl=foo system template switch. The attack was blocked by Admin Tools.
template= in URL	Code: `template` See the Configure WAF page, Block template=foo site template switch. The attack was blocked by Admin Tools.
MUA Shield	Code: `muashield` See the Configure WAF page, Malicious User Agent block (MUAShield). The attack was blocked by Admin Tools.
Bad Behaviour	Code: not applicable See the Configure WAF page, Bad Behaviour integration. The attack was blocked by Admin Tools. NO LONGER PRESENT SINCE ADMIN TOOLS 2.5.3
RFIShield	Code: `rfishield` See the Configure WAF page, Remote File Inclusion block (RFIShield). The attack was blocked by Admin Tools.
DFIShield	Code: `dfishield`

See the Configure WAF page, Direct File Inclusion shield (DFIShield). The attack was blocked by Admin Tools.

UploadShield — Code: `uploadshield`

This feature is obsolete.

XSSShield — Code: `xssshield`

(Only on older sites) Cross Site Scripting block (XSSShield). The attack was blocked by Admin Tools. This has been removed in Admin Tools 3.6.7 as it was throwing too many false positives (legitimate requests being blocked).

Spammer (via HTTP:BL) — Code: `httpbl`

See the Configure WAF page, SQLiShield protection against SQL injection attacks. The attack was blocked by Admin Tools.

Login failure — Code: `loginfailure`

Someone tried to log in in the front- or back-end of your site with the wrong username and/or password.

Two-factor Auth Fail — Code: `securitycode`

Someone tried to log in the back-end of your site but provided the wrong Two Factor Authentication code. Please note that this feature has been removed since Admin Tools 3.5.0. If you see it, it probaby comes from an old version of Admin Tools. We have contributed our Two Factor Authentication code to Joomla itself since Joomla 3.2.0 released in late 2012.

Backend Edit Admin User — Code: `nonewadmins`

Someone tried to create or edit an administrator user from the backend of your site. In this context "administrator user" means any user who belong in one or more User Groups that gives them backend login privileges. In a default Joomla! installation these are the users belonging to the Manager, Administrator and Super User groups.

Frontend Edit Admin User — Code: `nonewfrontendadmins`

Someone tried to create or edit an administrator user from the frontend of your site. In this context "administrator user" means any user who belong in one or more User Groups that gives them backend login privileges. In a default Joomla! installation these are the users belonging to the Manager, Administrator and Super User groups.

Configuration Editing — Code: `configmonitor`

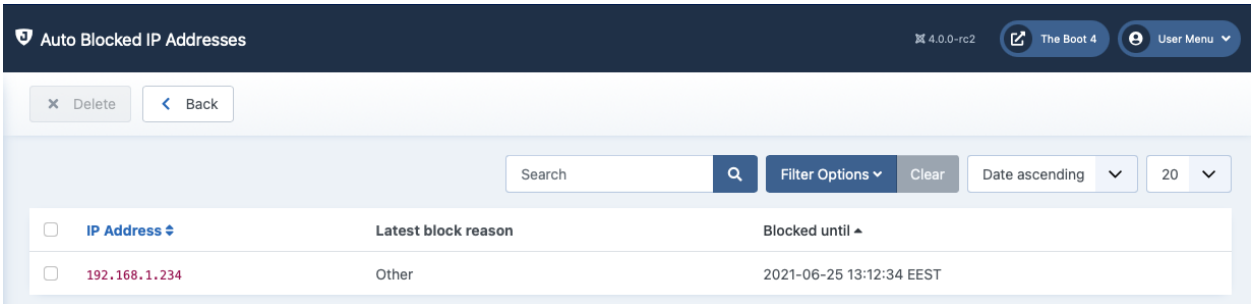
Someone tried to change either the Global Configuration of Joomla! itself or the configuration (Options) of a component. Please consult the additional information saved with this blocked request to understand which configuration was attempted to be changed. The change may have originated from the backend or the frontend of your site.

ItemidShield — Code: `itemidshield`

An invalid Itemid value was detected and your ItemidShield configuration preference is Block. The attack was blocked by Admin Tools.

9.8. Auto Blocked IP Addresses

Auto Blocked IP Addresses



This page lists the automatic banning of repeat offenders. You will only see any records here if you have turned on the "IP blocking of repeat offenders" option in the Configure WAF page and there have been repeat offenders. For each auto-banned IP you can see the IP address being banned, the latest blocked request from this IP and until when this auto-ban will be in effect.

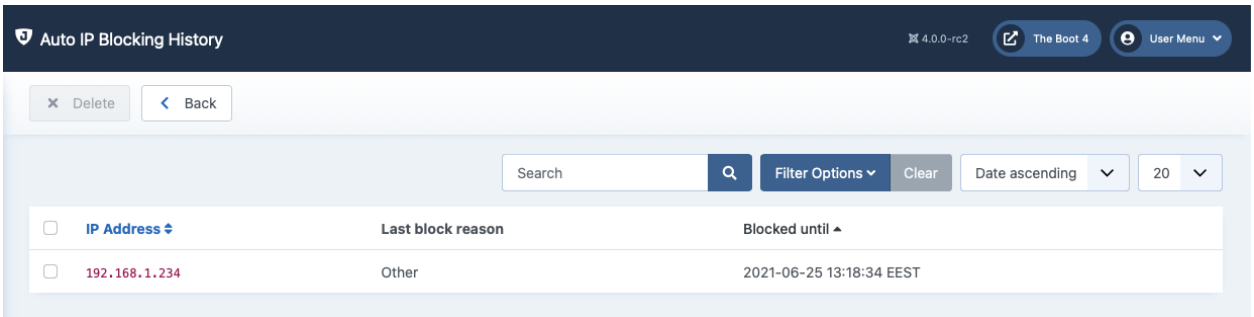
Please remember that this page only lists the automatic bans currently in effect. For a list of automatic IP bans which have been lifted please consult the "Auto IP Blocking History" page.

Note

If you want to unblock someone who got their IP inadvertently blocked you will have to remove all records belonging to their IP address in FOUR (4) places: Site IP Disallow List, Blocked Requests Log, Auto IP Blocking Administration and Auto IP Blocking History. Alternatively, use the Unblock IP button in the Web Application Firewall control panel page in Admin Tools.

9.9. Auto IP Blocking History

Auto IP Blocking History



This page shows the history of the automatic IP bans imposed on repeat offenders. You will only see any records here if you have turned on the "IP blocking of repeat offenders" option in the Configure WAF page and there have been repeat offenders in the past whose automatic ban has now been lifted. For each old auto-banned IP record you can see the IP address which was banned, the latest blocked request from this before it got banned and until when this auto-ban was in effect.

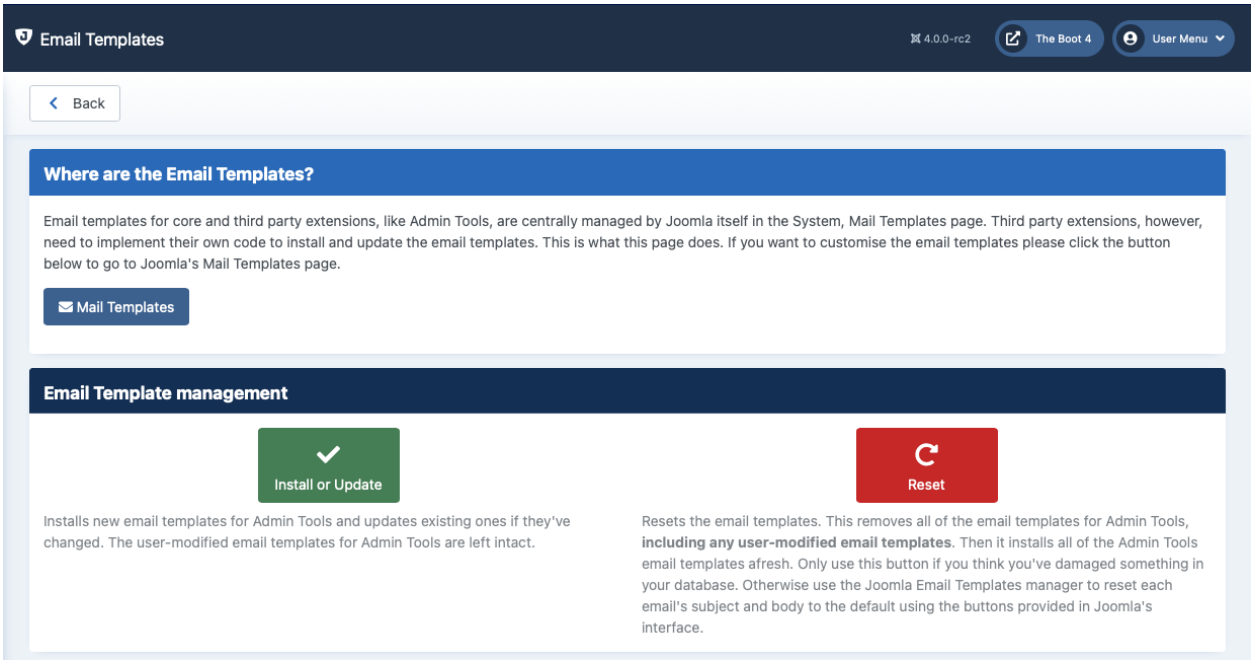
The contents of this page are used by Admin Tools together with the "Add persistent offenders to the IP Disallow List" option in the Configure WAF page to determine which IPs of repeat offenders should be automatically added in the permanent IP Disallow List.

Note

If you want to unblock someone who got their IP inadvertently blocked you will have to remove all records belonging to their IP address in FOUR (4) places: Site IP Disallow List, Blocked Requests Log, Auto IP Blocking Administration and Auto IP Blocking History. Alternatively, use the Unblock IP button in the Web Application Firewall control panel page in Admin Tools.

9.10. Email templates

Email templates



Admin Tools 7 and later uses Joomla's built-in email templates feature for all its emails. You can view and edit these email templates by going to System, Templates, Mail Templates and filtering by the Admin Tools component. Alternatively, click the Mail Templates button on this page.

Admin Tools tries to install its mail templates when you install or update the Admin Tools package. If you find that some email template was not installed OR if you accidentally deleted an email template you can use the Install or Update button to reinstall the missing templates.

If you want to reset all Admin Tools email templates back to their original settings you can click on the Reset button. Sure, you can always edit each one of them and click the Reset to Default Subject and Reset to Default HTML Body buttons in Joomla's interface. However, if you really want to reset ALL emails at once it's so much faster clicking just one button.

10. Database tools

Warning

These features are only available on sites using the MySQL database server.

The database is the most important part of our websites. It holds all the data and most configuration options, i.e. everything which makes our site what it is. However, since data is being written to and deleted from the database,

the database tables are becoming fragmented. This can lead to slower responses. In some extreme cases the tables can become corrupt and stop working.

On a hard drive you know that you can always defragment it and run chkdisk or fsck (depending on your Operating System). For databases you have to go through a tedious process using a database administration tool, such as phpMyAdmin, to repair and optimize each and every table. Admin Tool's Database Tools are here to automate this tedious process for you!

There are three tools available:

- Repair & Optimise Tables will run the repair and optimisation process on all of your site's tables. If the process hangs for a long time after the first time you use it, run it again. The usual problem is that the Joomla! sessions table is so bloated that PHP times out waiting for your database server to optimise this table.
- Purge Sessions will purge (completely empty) and optimize only the sessions table. Doing so will log everybody out of the site, including yourself. Use this option sparingly and only when you observe severe problem when users are trying to log into the site.

A cut-down version of the optimisation process, addressing only the sessions table, can be scheduled to run on a timely basis by using the parameters of the "System - Admin Tools" plugin of the Professional release.

Note

Admin Tools no longer offers a tool to change the database collation. Joomla will automatically convert your database to UTF8MB4 if you are using a version of MySQL or MariaDB released after early 2015.

11. The PHP File Scanner

Note

This feature is only available in the distributed-for-a-fee Professional release of our software.

The very powerful PHP File Change Scanner feature can be used to perform a security scan of the PHP files included inside your site's root directory, as well as detect any modified or added files in subsequent runs. This feature is built upon our experience making the fastest, most stable, pure-PHP site backup engine with Akeeba Backup. Each scanned file also comes with a preliminary automatic security assessment ("threat score") which can give you a quick idea of how possible it is that the file in question could be suspicious.

The PHP File Change Scanner doesn't stop at scanning. Coupled with an array of handy features such as the ability to produce DIFF's (a synopsis of how modified files differ from the previous known copy), print and export the scan reports as well as the interactive report viewer which allows you to peek at the contents of each file, this feature can allow power users to detect and eliminate hacks much faster than using a purely manual method. You can also automate the run of the scanner engine using a standard CRON job (available for Joomla! 1.7 and later only), making sure that you always know what's going on with your site.

By default, only files with the extensions php, phps, phtml, php3 and inc will by scanned. This list is case sensitive, i.e. files with an extension of PHP (uppercase) will not be scanned. This is configurable in the component's Options.

The idea of this feature is to scan only PHP files, because the modification or addition thereof could signify a potential problem or hack of your site. The extensions we chose are those used by virtually all PHP executable files.

Keep in mind that not all hacking scripts are written in PHP. Some of them may be written in PERL, Python, Ruby, shell scripting, Python or they could be executable binaries. Some hackers may also place malicious PDFs, PNGs,

Word documents etc which will infect your computer if you open them. None of those files will be scanned by Admin Tools's PHP File Change Scanner.

11.1. How does it work and what should I know?

The PHP File Change Scanner works by recursively enumerating all files and folders under your Joomla site's root. In each directory scanned it is looking for PHP files and compares them to their last known state, as recorded in the database. It will then report any changes, i.e. files which have been modified or added since the previous scan. The following paragraphs will explain how some aspects of the file scanning and reporting engine work.

Scope of the scan. Only files inside your Joomla! site's root and its subdirectories, no matter how deep, will be scanned. If you have placed PHP files outside of your site's root, they will not be scanned. Any readable directory under your site's root will be scanned, even if it does not belong to the current Joomla installation. For example, if you have additional sites or subdomains stored in subdirectories of your site's root, they will be scanned too.

Only PHP files are scanned. Only files with the extensions configured in the component's options will be scanned. As noted above, this defaults to PHP files. Only PHP files are *meant* to be scanned. Even though you can add other file types the results you get for them with regards to the Threat Score will be WRONG.

Directories automatically skipped. Admin Tools Professional will automatically skip scanning the following directories: `tmp`, `cache`, `administrator/cache`, `log`. These files contain temporary files, logs disguised as PHP files or cache files disguised as PHP files. The contents of neither of those directories is supposed to be directly accessible over the web – and that's why Joomla! allows you to relocate them to off-site locations. If you run across an extension which references files in those directories from a frontend or backend page, uninstall it a.s.a.p. as this is a sign of a developer not knowing what they are doing. Do note that you can exclude more directories or specific files in the component's options.

Note

Regarding the tmp and log directories, Admin Tools Professional will actually take a look at your Global Configuration settings and exclude the directory for temp-files and directory for log files specified in there. Usually these are the tmp and log directories respectively, hence the reference to those directories in the paragraph above.

File comparison terms. In order to determine if a file is modified, Admin Tools will compare its size, last modification time and md5 sum. If any of these do not match the previous scan's results, the file is considered modified. If there is no record of that file in a previous scan, the file is considered to be new.

When a file change is detected. A file change is detected only if the file is added or modified since the immediately previous scan. This means that if you scan now, modify a PHP file and scan again, it will show up as modified. If you perform a third scan right after the second one, the file will NOT be reported as changed. This is normal! The file was changed between the first and second scan, but not between the second and third scan. Exception to this rule are files with a non-zero Threat Score which have not been manually marked as “safe”.

Threat score calculation. Whenever Admin Tools Professional encounters a new or modified file, it calculates a "threat score". This is a weighed sum of potential security "red flags". Essentially, Admin Tools Professional runs a few heuristics against the PHP file in question, looking for code patterns which are commonly (but **NOT NECESSARILY**) used in hacking scripts and hacked files. Each of those patterns is assigned a "weight". The weight is multiplied by the number of occurrences of the pattern to give a score. The sum of these scores is what we call a "threat score". How to interpret it: the higher the threat score, the more probable it is that this could be a nefarious file and its contents should be manually assessed. Please note that a high threat score does not necessarily mean that the file is hacked or a hacking script. Likewise, a low but non-zero threat score (1-10) does not necessarily mean that the file in question is necessarily safe. Please take a look at the next few sections for more information.

Removing old scans has some consequences. When you remove an old scan, Admin Tools also removes all associated file alert records. If you have defined some files with a non-zero Threat Score as "Marked Safe" in this scan's report,

then this information is lost when you delete this scan. As a result, subsequent scans will, again, report the file as "Suspicious".

Heavy database usage. In order for this feature to work, Admin Tools Professional needs to perform very heavy use of your database. There will be at least one database query for each and every PHP file on your site. An average site contains about 3,000 such files. Moreover, there will be one database query for each and every new or modified file.

Heavy resource usage. Scanning your site is a very CPU and memory intensive procedure. Admin Tools Professional has to scan your entire site, find the PHP files and for each on them read it, calculate an MD5 sum, read data from the database, compare it with the information already calculated and write data to the database. This does put a big strain on your server, similar to what you get when you're backing up your site.

Requirement for a writable temp-file directory. In order for this feature to work, we need to keep a temporary file in your site's temp-files directory (configurable in the Global Configuration page, usually it's `tmp` under your site's root). For this to be possible, your tmp directory has to be writable. In most likelihood it already is.

Depending on your file ownership and permissions, your tmp directory may be unwritable. In this case and this case only, you have to perform a trick to make it writable without compromising the security of your site. First, give that directory 0777 permissions. Then, upload (using FTP) a .htaccess file in your temp-files directory with the following contents:

```
<IfModule !mod_authz_core.c>
Order deny,allow
Deny from all
</IfModule>
<IfModule mod_authz_core.c>
<RequireAll>
Require all denied
</RequireAll>
</IfModule>
```

Give the .htaccess file you just uploaded 0444 permissions.

Remember to use Admin Tools' Permissions Configuration to set up the permissions of the directory to 777, otherwise the folder will become unwritable as soon as you use Admin Tools' Fix Permissions feature. The trick outlined above makes the temporary directory world-writable (anyone with access to the server can write to it). This is normally unsafe. However, it is unsafe only if anyone could access the files in that directory over the web, essentially being able to execute arbitrary PHP code. By uploading the .htaccess we mentioned, you made the directory inaccessible from the web. This means that a potential attacker could write arbitrary PHP files in this directory, but not execute them, therefore no longer posing a security risk. By changing the permissions of the .htaccess file to 0444 we made it read-only, so that a potential attacker can not override it, unless he has FTP access to your site (in which case your site is already hacked, so you shouldn't worry about the temp-files directory any more...).

Potential problems. As stated above, the file scan operation is very database, CPU and memory intensive. This can cause failure of the scan process due to one of several reasons, especially on lower-end hosts (usually: cheap or low quality shared hosts):

- **Memory exhaustion**. Getting an out-of-memory error is not at all unlikely. We strongly recommend having *at the very least* 32Mb of available PHP memory. We recommend 64Mb to 128Mb for trouble-free operation. If you only have 16Mb or less of available PHP memory, the scan will most likely fail.
- **Exhausting your MySQL query limit.** Some hosts have a limit on how many queries you can run per minute or per hour. Because the file scan is very database-intensive, you may exhaust this limit, causing the scan to crash.
- **MySQL server has gone away.** Likewise, some hosts have set up MySQL (the database server) to forcibly close the connection if it doesn't receive data for a short time period, usually anything between 0.5 and 3 seconds. This could cause the infamous "MySQL server has gone away" error message, killing your scan.

- **Timeout.** Calculating MD5 and diffs for large files is a very time consuming process. It is possible that PHP times out during that operation, especially on slow, low-end hosts.
- **Hitting the CPU usage limit.** Many hosts enforce a CPU usage limit. Given that the file scan is a very CPU-intensive process, it is possible that you hit that limit. What usually happens is that the host kills the script causing the "excessive" CPU usage (our file scan operation).

All of the above manifest themselves as a 500 Internal Server Error message or a never ending scan process when trying to scan your site. Unfortunately, these are all server limitations and we can not work around them, while maintaining the usefulness of the PHP File Change Scanner feature. If you hit on those limitations, our recommendation is to switch to a higher quality host.

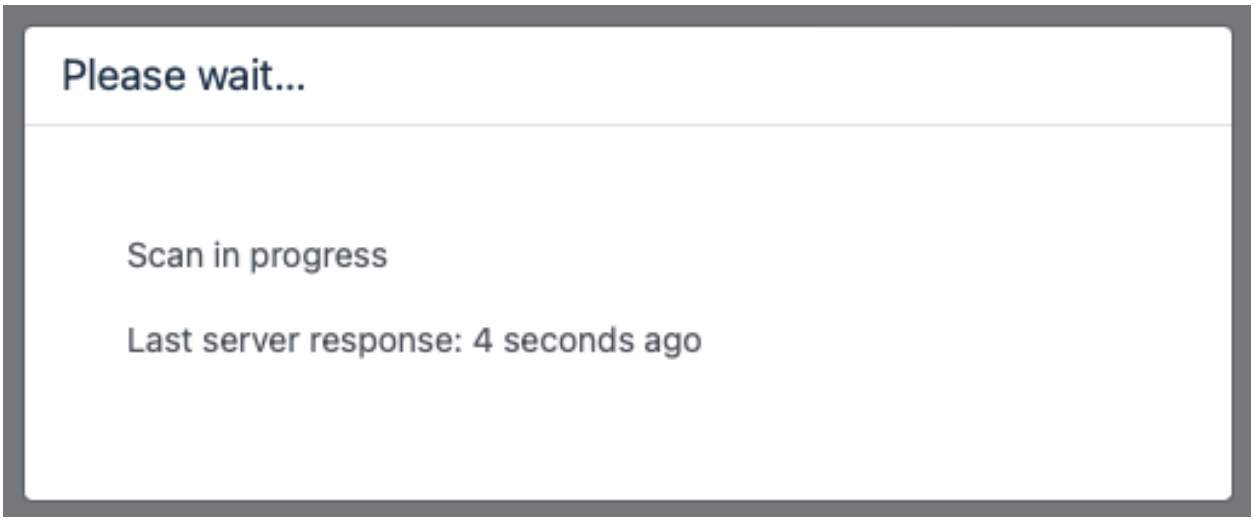
11.2. Configuration

You can configure the PHP File Change Scanner in the component's Options page. Just go to your site's back-end and click on Components, Admin Tools. Then click on the Options button to open the Options page. The settings for the file scanner can be be found in the File Scanner tab.

11.3. Scanning and administering scans

Performing a new scan

PHP File Scanner: Running a scan



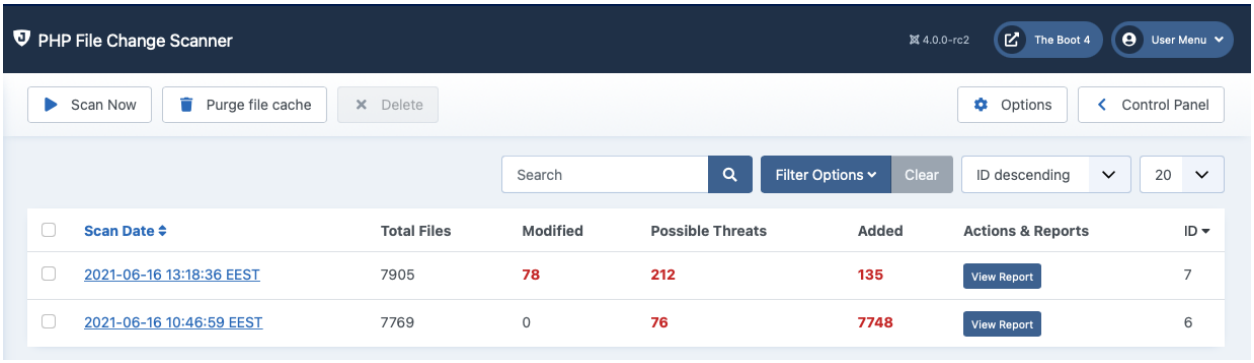
Performing a scan is fairly simple. Just go to your site's backend, Components, Admin Tools and click on PHP File Change Scanner. On that page, simply click on Scan Now to initiate the scan. A modal dialog is displayed.

The scan process is split in many steps in order to avoid server timeouts. Take a look at the Last server response label. It tells you for how long the current step is running. If this figure goes over 120 seconds, you can be sure that the scan is stuck. In case the scan is stuck or throws an error, please read the "How does it work?" section.

Please note that the first time you run this feature, all scanned PHP files will be reported as New. This is normal. Since there was no previous scan, all PHP files are new as far as Admin Tools is concerned. A side-effect of this behaviour is that all PHP files go through the "Threat score" determination engine which will typically result in a list of 30-100 files you should check. In other words, even if you run this feature for the first time after a site is hacked, it will narrow down the list of files you should check.

Managing scans

PHP File Scanner: Managing scans

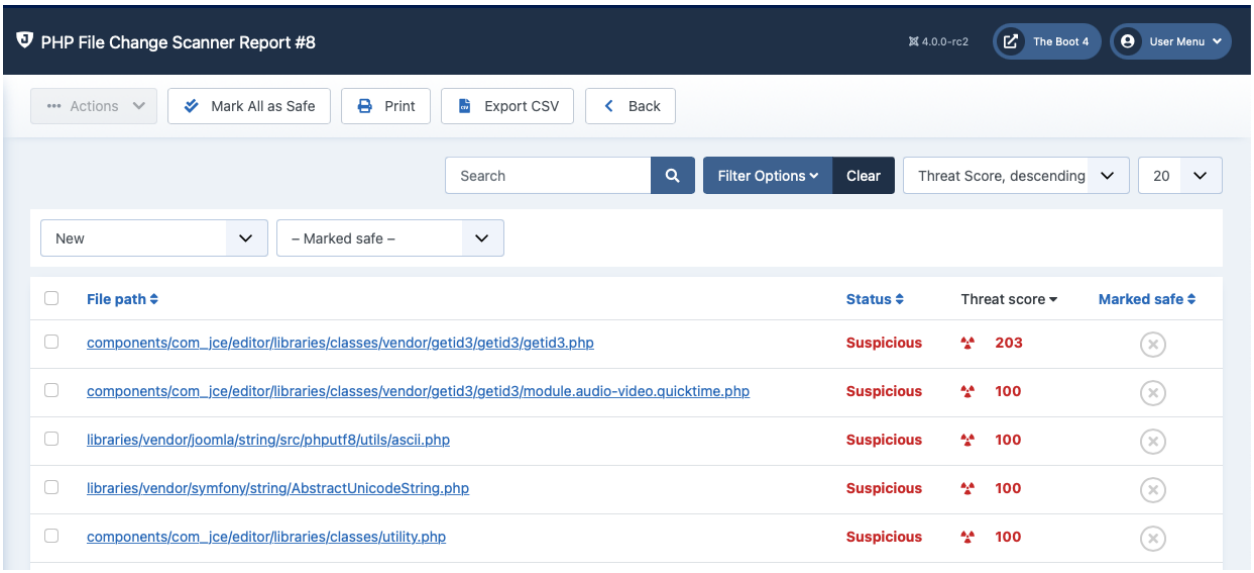


The main page of the PHP File Change Scanner feature gives you an overview of the scan operations. From left to right, you see the following columns on each row:

- **A checkbox** which is used to select the row(s) you want to delete, by pressing the Delete button on the toolbar.
- **Scan date** is the date and time this scan was performed. The date and time are shown in GMT (UTC) timezone.
- **Total files** is the total number of PHP files which Admin Tools detected
- **Modified** is the total number of PHP files which Admin Tools detected that are modified since the last scan or have a threat score greater than 0 and not marked by you as safe.
- **Possible threats** is the total number of PHP files, new, added or modified, with a non-zero threat score.
- **Added** is the total number of PHP files which were added since the last scan.
- **Actions & Reports** contains a link titled View Report when modified or added files are detected on your site.
- **The scan ID** (a number) is a monotonically increasing number, i.e. each new scan has an ID which is equal to the previous scan's ID plus one.

11.4. Reading the reports

PHP File Scanner: Reading the reports



The report view of the PHP File Change Scanner allows you to navigate through the results of a file scan operation, enabling you to review any suspicious files. Each row contains the following columns:

- **File path** is the path and name of the file, relative to your site's root directory. Clicking on it will open the Examine File view for that file.
- **Status** can be one of:

  New — A file which was added since the last file scan. When you scan a site for the first time, all files will have this status. This could be a file created by your instaled extensions, a file you uploaded yourself, a file added during an extension upgrade or a hacking script.

  Modified — A file which was modified since the last file scan. A file can be modified because you edited it, an extension update replaced it or because the site was hacked.

  Suspicious — A suspicious file is a file which did exist during the previous scan, has not been modified and has a non-zero Threat Score. This does not necessarily mean that the file is hacked or that it has a nefarious purpose. Please see the discussion regarding the Threat Score below.

  If a file has a non-zero threat score (therefore potentially dangerous, see below) the status will appear in bold letters.

- **Threat Score**. The higher this number is, the most likely it is that the file is hacked or nefarious. Please note that a high threat score does not necessarily mean that the file is hacked or a hacking script. Likewise, a low but non-zero threat score (1-10) does not necessarily mean that the file in question is necessarily safe. The number is merely A PROBABILITY INDICATOR. Admin Tools prefers to err on the side of caution. This means that false positives (high threat scores for perfectly safe, not hacked files) are all too common. There are several legitimate files in Joomla itself and its extensions — even our extensions — which will rack up a high threat score because they are doing work at a low level and use PHP constructs which in a different context would be "suspicious". None of these files is hacked or nefarious. In order to understand why that happens, let's take a look at what the Threat Score is and how it's calculated.

Whenever Admin Tools Professional encounters a new or modified file, it calculates a "threat score". This is a weighed sum of potential security "red flags". Essentially, Admin Tools Professional runs a few heuristics against the PHP file in question, looking for code patterns which are commonly (but **NOT NECESSARILY**) used in hacking scripts and hacked files. Each of those patterns is assigned a "weight". The weight is multiplied by the number of occurrences of the pattern to give a score. The sum of these scores is what we call a "threat score". How to interpret it: the higher the threat score, the more probable it is that this could be a nefarious file and its contents should be manually assessed.

The first thing you should do is to compare the file you have with the same file from a fresh installation of Joomla! and the extension this file belongs to. The path of the file will tell you which extension it belongs do. You can install a new Joomla! site on a local server and install that extension on it, after downloading it afresh from its developer's site (do NOT use warez sites; not only it's immoral, it's also more than likely the files there are compromised in an effort to backdoor your site). Find the file with the high threat score on the new site and compare it with the one from your regular site you are using the PHP file comparison on. A very handy tool to compare files is WinMerge [http://winmerge.org/]. If you're not on Windows or Linux (the platforms supported by WinMerge) you can search for graphical diff or file comparison tools for your platform. I have my favourites for macOS, but since they're all commercial I'd rather not suggest any of them. In any case, if the files match then the file is safe. In this case you can click on the icon in the Marked Safe column so that it turns into a green checkmark. When you do that, future scans will not report the file *unless* it is changed.

A quick but not entirely reliable way to see if a file is compromised is to quickly scan its top and bottom 20 lines. The vast majority of hacking scripts adds the hack code either at the top or at the bottom of the file. If no suspicious code is seen in there, your file is *most likely* safe. If you want to be certain beyond a shred of doubt use the full file comparison method we described above.

Tip

It's a good idea to filter the list by threat score. Just click on the Threat Score header twice. This will place the highest rated files (therefore more likely to be malicious) at the top of the list.

- **Marked Safe**. All files with a non-zero threat score will appear on each and every scan as Suspicious. Obviously, you don't want to go through the tedious task of manually verifying files as described above for each and every scan. Marking a file as safe tells Admin Tools that this particular file, in its current state, is not suspicious and should not be reported again as suspicious unless it's modified. Unmarking the file (default) will report this file as suspicious during the next scan.

  Keep in mind that if someone hacks your site, he could run a scan, mark the hacked files as safe and then run yet another scan in an attempt to hide his tracks. If in doubt, just delete all of the scans and run a new scan. This effectively resets the "Marked Safe" status of all files and will reassess the threat score of all files on your site, just like the very first scan you did on that site.

You can print the report by clicking on the Print button on the toolbar. The Print button will print out all of the files on the report, not just the ones you currently see on your screen. If you have a lot of files in the scan (hundreds to thousands) this may slow down your server or fail to load at all. It is advisable to print out the result in landscape (not portrait) orientation. Moreover, the Export CSV button will export the entire report in a comma separated values (CSV) file which you can them import in Microsoft Office Excel, Apple Numbers, OpenOffice.org/LibreOffice Calc, Google Docs spreadsheet or any other desktop or on-line spreadsheet application.

The button Mark All as Safe will mark all files with a non-zero threat score on the current report as Safe. It is advisable to do that only in the following case. Take a new scan, make sure it has no new or suspicious files. Run any updates on your site. Take a new scan; the update files appear as new, modified and / or suspicious. Use the Mark All as Safe button to mark these files as Safe. These files were installed during the update and are trusted (as far as you can trust the developers which supplied them). Please note that if you do NOT trust the source of a particular update you should not use this button. A good reason to not necessarily trust the update is if the software you are updating has recently

(e.g. in the last 12 months) been taken over by a new developer. There are many cases where legitimate software was bought out by shady people who waited for a few months before ultimately publishing an update with malware hidden in it. Therefore we strongly recommend that you exercise abundant caution with code coming from a new developer who has recently taken over established, legitimate software.

The Examine File view

When you click on a file name, the Examine File view opens. In this view you can view detailed information about the file, as well as the file itself.

In the File Information pane you can see the generic file information you would see in the Report view.

Below that you can find the Current file source pane. Please note that this pane shows you the contents of the file *as it is right now*. This may or may not be equal to the contents of the file which was scanned. If the fie has since been deleted, you will see an empty pane.

If you have enabled the diff feature in the component's configuration page and this is a Modified file, you will also see the Diff to the previous version pane. On this pane you will see the consolidated differences between the scanned file and its previous state.

11.5. Automating the scans (CRON jobs)

Tip

Consult the PHP File Change Scanner Scheduling page for detailed information, tailored to your site, without having to read this documentation page.

Important

In past versions of Admin Tools we shipped our own CLI script to let you schedule the scans with a CRON job. Since Admin Tools 7 we are using Joomla's CLI application. If you had schedules scans in the past you will need to edit your CRON jobs. That's one thing we cannot do automatically for you when you update since CRON jobs are handled by your host, not Joomla itself.

Admin Tools adds a command to the Joomla CLI application which allows you to run the PHP File Change Scanner through a CRON job or directly from the command line. For this to work you must publish the plugin Console – Admin Tools. This plugin is automatically installed and published for you when you install or update Admin Tools. Please keep in mind that if you disable this plugin the command line scans will fail with an error.

To schedule a file scan, you will have to use the following command line to your host's CRON interface:

```
/usr/local/bin/php /home/USER/webroot/cli/joomla.php admintools:scan
```

where `/usr/local/bin/php` is the path to your PHP CLI executable and `/home/USER/webroot` is the absolute path to your web site's root. You can get this information from your host.

Special considerations:

- Most hosts do not impose a time limit on scripts running from the command-line. If your host does and the limit is less than the required time to scan your site, the scan will fail.
- Joomla's `cli/joomla.php` script is not meant to run from a web interface. If your host only provides access to the CGI or FastCGI PHP binaries, this script will not work with them. The solution to this issue is tied to the time constraint above.

- Admin Tools merely adds a command to Joomla's CLI application. The execution interface is handled by Joomla. If you do not see the message “Beginning a site scan with the PHP File Change Scanner” when trying to run a scan through Joomla's CLI application the problem lies in Joomla's code, not our code, meaning that we are unlikely to be able to help you.

- Please bear in mind that Joomla's CLI application will load and run system plugins installed on your site. If you have third party system plugins which *wrongly assume* that they are always running under Joomla's frontend or backend application (i.e. a web server application) and fail when loaded through the CLI application then your file scans will fail. If this happens you will need to take the issue with the third party extensions which shipped the offending system plugin(s). We cannot modify third party software.

- Some servers do not fully support this scan method. The usual symptoms will be a scan which starts but is intermittently or consistently aborted in mid-process without any further error messages and no indication of something going wrong. In such a case, trying running the scan from the back-end of your site will work properly. If you witness similar symptoms, you can most likely not automate your site's scan.

11.6. Automating the scans (front-end scheduling URL)

Tip

Consult the PHP File Change Scanner Scheduling page for detailed information, tailored to your site, without having to read this documentation page.

The front-end scheduling URL feature is intended to let you perform an unattended, scheduled scan of your site. This is not the recommended method to do it, though. You should only use this method if the regular command line CRON jobs are not supported by your server.

The front-end backup URL performs a single scan step and sends a redirection (HTTP 302) header to force the client to advance to the next page, which performs the next step and so forth. You will only see a message upon completion, should it be successful or not. There are a few limitations, though:

- **It is not designed to be run from a normal web browser**, but from an unattended cron script, utilizing **wget** or **cron** as a means of accessing the function.

- The script is not capable of showing progress messages.

- Normal web browsers tend to be "impatient". If a web page returns a bunch of redirection headers, the web browser thinks that the web server has had some sort of malfunction and stop loading the page. It will also show some kind of "destination unreachable" message. Remember, these browsers are meant to be used on web pages which are supposed to show some content to a human. This behaviour is normal. Most browsers will quit after they encounter the twentieth page redirect response, which is bound to happen. If you ask for support about this we will tell you it's not an issue, there is nothign to fix, it's exactly as the browser is supposed to work.

- Command line utilities, by default, will also give up loading a page after it has been redirected a number of times. For example, **wget** gives up after 20 redirects, **curl** does so after 50 redirects. Since Admin Tools redirects once for every of the several dozens of scan steps it is advisable to configure your command line utility with a large number of redirects; about 10000 should be more than enough for virtually all sites.

Tip

Do you want to automate your scans despite your host not supporting CRON? Webcron.org [http://webcron.org/] fully supports Admin Tools' front-end scan scheduling feature and is dirt cheap - you need to spend about 1 Euro for a year of daily site scan runs. Just make sure you set up your Webcron CRON job time limit to be at least 10% more than the time it takes for Admin Tools to perform a scan of your site.

Before beginning to use this feature, you must set up Admin Tools to support the front-end scan scheduling option. First, go to Admin Tools' main page and click on the Options button. Find the option titled Enable front-end scheduling and set it to `Yes`. Below it, you will find the option named Secret key. In that box you have to enter a password which will allow your CRON job to convince Admin Tools that it has the right to request a backup to be taken. Think of it as the password required to enter the VIP area of a night club. After you're done, click the Save button on top to save the settings and close the dialog.

Tip

Try entering a complex password here. Do note that special characters and non-latin letters need to be "URL escaped" (written as something like %20, i.e. percent sign followed by two hexadecimal digits) in the scheduling URL. The easiest way to get the correct URL is using the PHP File Scanner Scheduling button in Admin Tools' main page.

Most hosts offer a CPanel of some kind. There has to be a section for something like "CRON Jobs", "scheduled tasks" and the like. The help screen in there describes how to set up a scheduled job. One missing part for you would be the command to issue. Simply putting the URL in there is not going to work.

Warning

If your host only supports entering a URL in their "CRON" feature, this will most likely not work with Admin Tools. There is no workaround. It is a hard limitation imposed by your host. We would like to help you, but we can't. As always, the only barrier to the different ways we can help you is server configuration. You can, however, use a third party service such as WebCron.org.

If you are on a UNIX-style OS host (usually, a Linux host) you most probably have access to a command line utility called **wget**. It's almost trivial to use:

wget --max-redirect=10000 "http://*www.yoursite.com*/index.php?option=com_admintools&

view=filescanner&key=*YourSecretKey*"

Of course, the line breaks are included for formatting clarity only. You should not have a line break in your command line!

Important

Do not miss the **--max-redirect=10000** part of the **wget** command! If you fail to include it, the backup will not work with **wget** complaining that the maximum number of redirections has been reached. This is normal behavior, it is not a bug.

Important

YourSecretKey must be URL-encoded. You can use an online tool like http://www.url-encode-decode.com or simply consult the PHP File Change Scanner Scheduling page.

Warning

Do not forget to surround the URL in double quotes. If you don't the scan will fail to execute! The reason is that the ampersand is also used to separate multiple commands in a single command line. If you don't use the double quotes at the start and end of the scheduling URL, your host will think that you tried to run multiple commands and load your site's homepage instead of the front-end scheduling URL.

If you're unsure, check with your host. Sometimes you have to get from them the full path to wget in order for CRON to work, thus turning the above command line to something like:

/usr/bin/wget --max-redirect=10000 "http://*www.yoursite.com*/index.php?option=com_admintools&

view=filescanner&key=*YourSecretKey*"

Contact your host; they usually have a nifty help page for all this stuff. Read also the section on CRON jobs below.

The ampersands above should be written as a single ampersand, not as an HTML entity (&). Failure to do so will result in a 403: Forbidden error message and no backup will occur. This is not a bug, it's the way wget works.

`wget` is multi-platform command line utility program which is not included with all operating systems. If your system does not include the `wget` command, it can be downloaded at this address: http://wget.addictivecode.org/FrequentlyAskedQuestions#download. The `wget` homepage is here: http://www.gnu.org/software/wget/wget.html. Please note that the option `--max-redirect` is available on `wget` version 1.11 and above.

Using a web browser or `wget` version 1.10 and earlier will most probably result into an error message concerning the maximum redirections limit being exceeded. This is *not* a bug. Most network software will stop dealing with a web site after it has redirected the request more than 20 times. This is a safety feature to avoid consuming network resources on misconfigured web sites which have entered an infinite redirection loop. Admin Tools uses redirections creatively, to force the continuation of the scan process without the need for client-side scripting. It is possible, depending on site size, Admin Tools configuration and server setup, that it will exceed the limit of 20 redirections while performing a site scan operation.

11.7. Automating with Joomla Scheduled Tasks

Note

This feature is only available on Joomla 4.1.0 and later. Make sure the plugin Task - Admin Tools is published.

Joomla 4.1 and later versions have a feature called Scheduled Tasks. It can be used to automate the scanning of your site with Admin Tools without having to create a CRON job just for the PHP File Change Scanner — or at all, in most cases.

You are responsible for setting up the Scheduled Tasks execution trigger

By default, Joomla Scheduled Tasks **will not run at all, ever**. Something needs to periodically remind Joomla to check if there are any scheduled tasks to run and, if so, execute them. Joomla provides three triggering methods for its scheduled tasks:

1. **CLI CRON jobs**. This is the most reliable triggering method. You set up one CRON job which runs every minute and tells Joomla to look for any pending tasks and execute them. This method is only suitable for hosts with real, CLI CRON jobs.

   You need to set up a CRON job to run the command

   `/usr/bin/php /path/to/site/cli/joomla.php scheduler:run --all`

   where `/usr/bin/php` is the full filesystem path to the PHP CLI executable and `/path/to/site` is the full filesystem path to your site. These items are host-specific. We are not your host, therefore we cannot possibly know what these are; please ask your host, that's what you are paying them for. Likewise for how to set up CRON jobs on your site's server.

   Important! This CRON job must be set up to run every minute of every hour of every day.

2. **“Web Cron” (URL-based CRON job)**. This is the second most reliable triggering method. You set up a CRON job which accesses a special URL on your site every minute and tells Joomla to look for any pending tasks and

execute them. This method is suitable for hosts which only allow URL-based pseudo-CRON, i.e. accessing a URL periodically. We DO NOT recommend using this method with a third party service (such as webcron.org) because it gets very expensive, very fast. If your host does not support real or URL-based CRON jobs you are better off using the other automation methods mentioned earlier in this documentation.

1. Go to your site's backend, System, Managed, Scheduled Tasks.
2. Click on the Options button.
3. Click on the Web Cron tab.
4. Set the Web Cron option to Enabled.
5. Click on the Save button on the toolbar.
6. When the page reloads click on the Web Cron tab again.
7. Copy the “Webcron Link (Base)” contents. It's a URL similar to `https://www.example.com/component/ajax/?plugin=RunSchedulerWebcron&group=system&format=json&hash=f0oB4r`.
8. Create a CRON job to access this URL every minute of every hour of every day.

3. **Lazy Scheduling**. This is the least reliable method. Your scheduled tasks are only executed when there is visitor traffic on your site. This means that your scheduled maintenance tasks may not be executed exactly when you have scheduled them to run or, in the case of low traffic or intermittent traffic sites with a large number of tasks, not at all. Furthermore, they may cause resumable tasks like the PHP File Change Scanner to take a very long time to complete or in some cases never complete at all without an error. As a result we DO NOT recommend using Lazy Scheduling for the automation of the PHP File Change Scanner.
    1. Go to your site's backend, System, Managed, Scheduled Tasks.
    2. Click on the Options button.
    3. Click on the Lazy Scheduler tab.
    4. Set the Lazy Scheduler option to Enabled.
    5. Click on the Save & Close button on the toolbar.

You are responsible for setting up one of these trigger methods on your site. Again, bear in mind that Joomla does not have any of these set up by default, meaning that no scheduled tasks will execute.

Unfortunately, we cannot provide any support for setting up the execution of Joomla Scheduled Tasks. It's your responsibility to ensure that Scheduled Tasks do work on your site and you need to understand the limitations of each method, especially Lazy Scheduling. As a result we cannot offer any support for scheduled tasks which have not started at all; start at the “wrong” time; take “too long” to finish; or do start but not finish at all without returning an error. This is all part of how Joomla operates.

Depending on the trigger method, scans may be too slow, or fail to complete

You should also keep in mind that scanning your site is a process which normally takes several minutes of work, even on a relatively small site: Admin Tools has to find all .php files on your site, read each and every one of them and evaluate it for changes and threat score. This cannot be executed in a single page load; it would time out. Instead, we split the work in smaller chunks. When the file scanner scheduled task is executed it will perform a chunk of work.

If it needs to perform more work it will tell Joomla that it's not done yet and please execute me again at your earliest convenience. This will continue happening until the scan is complete.

Because of the chunked method of execution, scanning a site will need between a few to several hundred scheduled task execution triggers. When using the CLI CRON job or “Web Cron” these triggers happen once a minute which is much longer than once every 5 to 7 seconds when you run a scan from the backend of your site. As a result your scan will very likely take much longer to complete, even tens of times longer, than a scan made through the backend of your site or through one of the other scan automation methods. We do not provide any support about scans which take “too long” besides what is written in this documentation; it's how Joomla works.

When using the Lazy Scheduling the scheduled task triggers only happen when there is enough traffic on your site meaning that your site scanning might not complete in a reasonable amount of time or at all; or it might not even start at all. As a result we offer no support whatsoever for using the Lazy Scheduling triggering method for Joomla Scheduled Tasks. If it works for you, that's great news. If it doesn't work well or at all, sorry, we told you so and there's nothing we can do, it's how this core Joomla feature works.

Preparing Scheduled tasks

Make sure that you are using Joomla 4.1 or later. Scheduled Tasks were first introduced in Joomla 4.1; older versions do not have that feature.

Go to your site's administrator backend, System, Manage column, Scheduled Tasks.

Click on Options.

Set the Task Timeout to 300 — that's the Joomla default value. If your server has another time limit that's lower than this setting, e.g. a maximum CPU usage time limit, you will need to lower this setting to that value. If you are unsure you can ask your host. Click on Save.

If you are going to use Lazy Scheduling (**NOT RECOMMENDED, NOT SUPPORTED**) you need to go to the Lazy Scheduler tab and set Lazy Scheduler to Enabled. Set Request Interval (seconds) to 60. Then click on Save & Close.

If you are going to use a URL-based CRON jobto trigger Joomla Scheduled Tasks you need to go to the Web Cron tab and set Web Cron to Enabled. Then click on Save. Copy the “Webcron Link (Base)”. You will have to set up a CRON job to access this URL **every minute**. If you are unsure how to do that, please ask your host. Kindly note that the information we told you to get from your host is host-specific, we do not know it and cannot help you with it because we are not your host.

If you are going to use a CLI-based CRON job to trigger Joomla Scheduled Tasks you need to run Joomla's `cli/joomla.php` file with the command line parameters `scheduler:run --all` . For example:

```
/usr/local/bin/php /path/to/your/site/cli/joomla.php scheduler:run --all 1>/dev/null 2>/de
```

Where `/usr/local/bin/php` is the path to the PHP CLI executable on your server and `/path/to/your/site` is the absolute path to your site's web root directory. Both of these pieces of information as well as instructions for setting up a CRON job can be provided by your host. Kindly note that the information we told you to get from your host is host-specific, we do not know it and cannot help you with it because we are not your host.

Setting up a scheduled task

First, make sure that the Task - Admin Tools plugin is installed and enabled on your site and that you are using Joomla 4.1 or later.

Go to your site's administrator backend, System, Manage column, Scheduled Tasks.

Click on New in the toolbar.

Select “Admin Tools – PHP File Change Scanner ”

There are two configuration options specific to this task under “Task Parameters”. Both are used to override the maximum execution time. First, let's talk about it a little bit. By default, when these options are set to 0, the scheduled task will execute a scan step for the “Maximum Work Time” set up in Components, Admin Tools for Joomla!, Control Panel, Options, File Scanner tab. This is typically small, by default 5 seconds. This makes sense because the scan is meant to be run from the backend of the site and we want many small steps. This is not a problem for a backend scan since each scan step starts a few hundred milliseconds after the last scan step completed. There is not a lot of time lost there and the scan completes as fast as possible.

As we said earlier, when using Joomla Scheduled Tasks the time between steps is substantially longer. When using CLI or URL based CRON jobs the task is triggered once every minute. With a Maximum Work Time of 5 seconds it means that the scanner works for 3 to 5 seconds, then nothing happens for 55 to 57 seconds. Rinse and repeat until the scan is done. If you do the math, that's an 8.33% duty cycle. This means that if scanning your site through the backend takes about 8 minutes, doing the same through a Joomla Scheduled Task would take *1 hour and 36 minutes*. That's insane, right?

It gets worse with Lazy Scheduling because the scheduled tasks will be trigger *at most* one every minute, depending on traffic. If there is not a lot of traffic they might be triggered once every 10 minutes on average. As a result the aforementioned site scan which takes 8 minutes through the backend of your site will now be taking *16 hours* to complete. This makes it completely impractical and that's assuming that you get an average of one visitor every 10 minutes which translates to at least 144 page loads evenly spaced out over the day or, more realistically, at least 2000 page loads a day.

The only way to improve this situation is to increase the duty cycle, i.e. make more work in each scan step. However, you cannot go and change the component-wide Maximum Work Time option; setting it very high (e.g. 60 seconds) would most likely result in the backend scans failing. Hence the override options.

In the examples above, setting the maximum execution time override to 50 seconds would allow the scan to complete in around 9 minutes for the CLI and URL trigger methods; and somewhere between 9 and 90 minutes with the Lazy Scheduling triggering method. While not ideal it's not too bad either; it becomes a realistic scheduling solution.

There is a reason we have two different override options. Most hosts apply different time limits for CLI scripts (CLI CRON jobs) and for scripts running on the web (URL based CRON and Lazy Scheduling). It is possible, though not recommended, to enable all three triggering methods for Joomla scheduled tasks. As a result we need two different overrides to make sure that the correct one will be used depending on where the task is being triggered from.

Finally note that the overrides can be automatically capped at runtime. If they are greater than the Task Timeout you set up in the Joomla Scheduled Tasks' Options page the override will be reduced to the Task Timeout. If the override is higher than the PHP timeout it will be reduced to the PHP timeout. This ensures that an override that's a bit too much isn't as likely to cause the scan to fail.

Scans can still fail if you set a maximum execution time override which is higher than the CPU maximum usage time per process enforced by your host. Typically this is in the 30 to 600 seconds range. Unfortunately, there is no good way to determine that which works across all hosts. If you see your scans failing without an error (the task appears as hung) contact your host and ask them what is the CPU maximum usage time per process (if they have no idea what you're talking about, please ask them to escalate the ticket to an engineer and ask them what's the ulimit -t for your user account; that's the proper jargon to tell the engineer EXACTLY what you need). If your host replies there's no such limit set the override to 30 and keep in mind that your scans automated with Joomla Scheduled Tasks will last *at least* twice as long as the backend scans.

Maximum execution time (CLI)	This applies only for tasks executed with the CLI CRON job triggering method. Set to 0 to use the Maximum Work Time set in the component options. Non-zero options are used instead of the Maximum Work Time *as long as they are greater than the Maximum Work Time*. We recommend setting this to 300. Set this to 50, 30 or even 10 if your scans appear to be hung (but they will become slower).

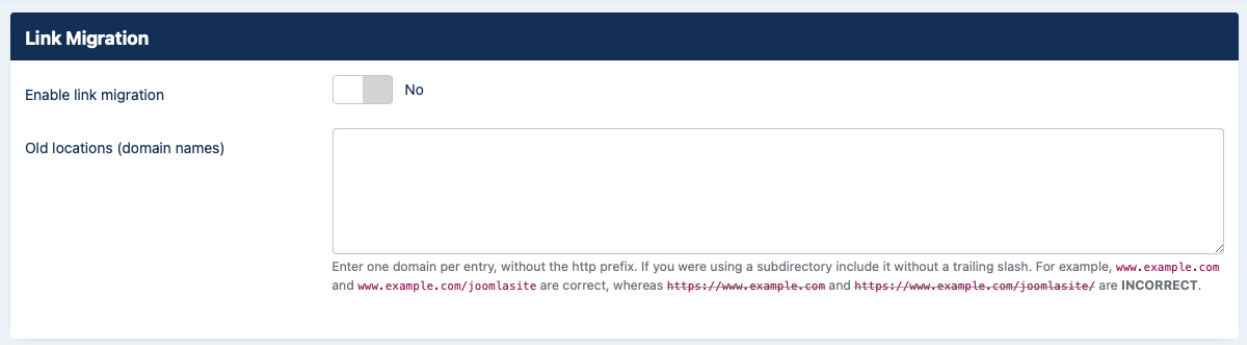
Maximum execution time (web)	This applies only for tasks executed with the URL CRON job and Lazy Scheduling triggering methods. Set to 0 to use the Maximum Work Time set in the component options. Non-zero options are used instead of the Maximum Work Time *as long as they are greater than the Maximum Work Time*. We recommend setting this to 50. Decrease to 30 or even 10 if your scans appear to be hung (but they will become slower).

12. SEO and Link Tools

Please note that Admin Tools is NOT a search engine optimisation extension. It's not meant to improve your site's search engine rankings. It is primarily a collection of security and administrative tools, hence its name. The SEO and Link Tools is a minimal set of features meant to make moving your site between domain names and from plain HTTP to HTTPS easier.

Link migration

SEO and Link Tools: Link migration



When you move your site across hosts, you may end up with broken intra-site links. Most of the times, this is caused by either putting absolute links or moving the site into a different directory name than it used to be.

In the first case, let's say you move your site from `www.example.com` to `www.example.org`. If you copied links from your browser's address bar and pasted them into your content or menus you're stuck with a bunch of links referencing the www.example.com domain name, i.e. `http://www.example.com/somepage.html`. Finding and changing those links is a mighty task, especially if you have thousands of content items.

In the latter case, which is the most common, the typical scenario goes like this. You develop your site locally, accessing it as `http://localhost/mysite`. Then you move your site to a live server with an address like `http://www.example.com`. Suddenly, all of your links and images are broken! Why? All WYSIWYG Joomla! editors create relative URLs. For example, linking to `images/stories/image.jpg` creates a link like `/mysite/images/stories/image.jpg` in your content's HTML source code. If you take a good look at this URL, you'll immediately notice the /mysite prefix. This works perfectly on your local server, as your site is inside the /mysite directory of your web root, but breaks on the live site as you are restoring to the web root itself! Again, finding all those references and changing them is a mighty task.

Might task it isn't anymore! Admin Tools Link Migration feature comes to your rescue. First, set the Enable link migration option to Yes in order to enable the feature. In the Old locations text area you will have to enter the domain names or subdirectories where your site used to live, one on each line. For example, if your site was hosted on `http://www.example.com`, you have to enter `www.example.com` on one line (that is, without the http:// or https:// prefix!). If you want to work around relative URLs, enter both the full URL and directory, one at each line, i.e. `http://localhost/mysite` on one line and `/mysite` on another line. Admin Tools will work its magic, migrating your URLs to point to your new site, on-the-fly as Joomla! is generating your site's pages.

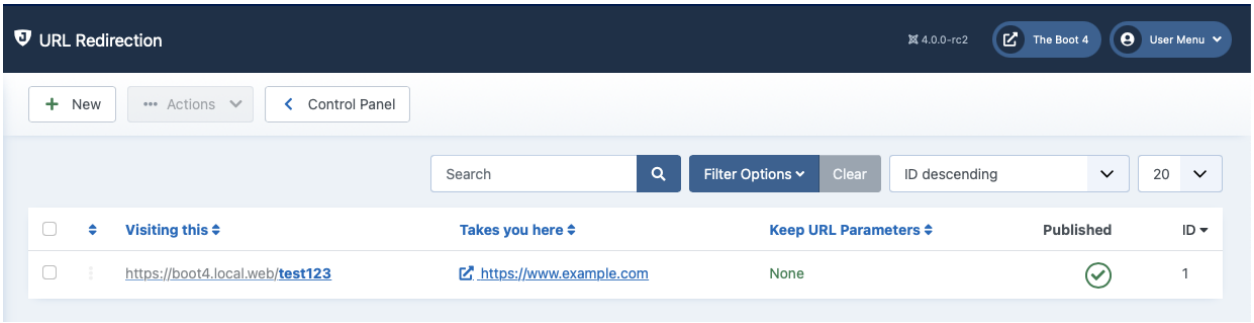
Important

Please remember to clear your Joomla! cache and your browser's cache after enabling this feature in order to see the changes in your browser when you reload your site's pages.

13. URL Redirection

Sometimes you need to create short, memorable URLs to some of your site's pages which Joomla!'s co-founder Brian Teeman calls PEF (Pub Ear Friendly). Arguably, telling someone to visit `http://www.example.com/downloads` is much easier than telling them to visit `http://www.example.com/index.php?option=com_downloads&view=repository&task=list` or even `http://www.example.com/site-resources/download.html`. Some other times you would like to use a short URL to an external site but do not wish to use one of the free services, like bit.ly, ow.ly, t.co or tinyurl.com for privacy reasons. Admin Tools to the rescue! The custom URL redirection feature allows you to do all of the above with a ridiculously simple interface.

The URL Redirection management page

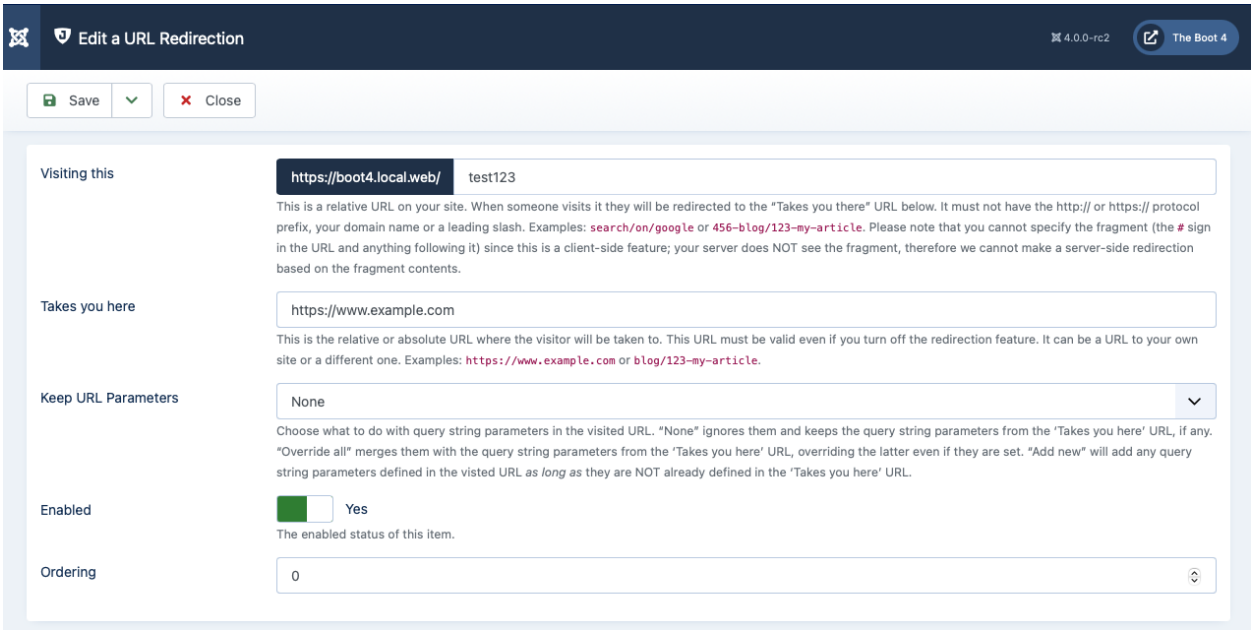


The main administration page shows you a list of the custom URL redirections defined on your sites. Each entry consists of the following information:

- The ordering handle. When you order the display by Ordering (ascending or descending) you can drag items using this handle to reorder them. URL Redirections are evaluated respecting this order.
- The left hand checkbox. The toolbar operations will apply only to the checked items.
- Visiting this. The URL on your site which triggers the redirection. When someone visits this URL they will be redirected to the “Takes you here” URL. The redirection takes place with an HTTP 301 (Permanently Moved) redirection to keep search engines happy. Clicking on the displayed value will open the Edit/Add page so that you can edit the entry.
- Takes you there. The URL where your visitors will be redirected to. This URL must be valid even when the URL Redirection feature is not enabled. It is existing content and you're about to create a new URL which will take your visitors to it. It can be a relative URL in your own site or an absolute URL to a different site. Clicking on it will open it in a new window so that you can see where your visitors will land when they are redirected.
- Keep URL Parameters. If it's set to None any URL parameters sent by your visitors when they access the Visiting this URL will be discarded. If it's set to Override All then their URL parameters will override any and all URL parameters in the Takes you there URL. If it's set to Add new then their URL parameters will only be applied if and only if they do not already exist in the Takes you there URL.
- Published. When unpublished, the redirection will not take place. Useful to temporarily take down a redirection without deleting it.

When adding a new entry or editing an existing entry, the following page appears:

The URL Redirection editor page



There are three fields to edit:

Visiting this
: A **relative** path which triggers the redirection.

  For example, if your site is accessible as `http://www.example.com/joomla`, entering `google` in this field will cause the URL `http://www.example.com/joomla/google` to redirect to the the URL you entered in the Existing URL field above. You can use subdirectories in your path, e.g. `search/external/google`.

  You can also redirect internal URLs, which contain index.php (non-SEF URLs). For example you can use `index.php?option=com_foobar&view=abc` to redirect this URL to somewhere else. Pitfalls: you must NOT put your site's URL in front of index.php. Please note that the visitor may put the URL parameters in a different order or include additional URL parameters. In the latter case, what will happen with the additional URL parameters is determined by the Keep URL Parameters option.

  In an effort to make what you need to enter here more obvious your site's URL is already present in front of the field. This is a reminder that you must NOT type your site's URL. If your site is accessible from multiple URLs, e.g. http://www.example.com, https://www.example.com and https://example.com, the redirection applies on all site URLs even though they are not all printed out on this form. This is not a bug, it's the expected behavior. Joomla only reports the current URL your site uses, not all possible ones. The redirection applies to your Joomla installation, not a specific domain, subdomain or site URL.

Takes you here
: An existing URL on your site, or a link to an external page.

  When using a URL in your own site you should provide a relative URL, i.e. you should not include the URL to your site's root. Use the relative path instead. For example, putting `index.php?option=com_frontpage` is sufficient to display the front-end component. You can use either an index.php URL or a SEF URL (as long as you have SEF URLs turned on in your Global Configuration!).

The biggest strength of this feature is the ability to enter external links. For instance you can enter `http://www.google.com` to redirect your visitors to Google's search page. Using this powerful feature allows you to run your private URL shortening service on your own domain.

Keep URL Parameters

When set to **None** any query string parameters in the URL typed in by your visitor (i.e. anything after the question mark) will be ignored.

When set to **Override All** any query string parameters in the URL typed in by your visitor will override any parameters in the Takes You Here URL, or added to it if they didn't exist in the first place.

When set to **Add New** any query string parameters in the URL typed in by your visitor which do not exist in the Takes You Here URL will be added to it. Existing query parameters will not be overridden.

If you are trying to redirect a non-SEF URL (a URL with index.php inside it), e.g. index.php?option=com_foobar&something=123, you will very likely need to set this option to either None or Add New. If you fail to do that you might end up with a redirection loop. This is not a bug, it's perfectly reasonable. When you allow Overide All and try to redirect from one component (option=com_something) to another (option=com_another) the redirection URL will have its option parameter (com_another) overridden with the old option parameter (com_something). Since you are trying to redirect com_something you end up in a redirection loop which will cause the browser to complain.

Enabled

When disabled, the redirection will not take place. Useful to temporarily take down a redirection without deleting it.

Tip

If you want to make a simple redirection set Existing URL to the URL you are redirecting to, New URL to the URL you are redirecting from and Keep URL Parameters to None.

Use the Save button to save the changes and go back to the administration page, Save & New to save the changes and start entering the information for a new redirection, Apply to save the changes and return to this editor page and Cancel to discard all changes and return th the administration page.

14. Cleaning your temporary files directory

Your Temporary Files directory (called *Temp Folder* in your site's Global Configuration page) is the directory where Joomla! and its extensions put short-lived files. For example, when Joomla is updating itself or installing an update to an extension it stores several files there.

One problem with that directory is that sometimes files can get stuck in it, when the code that created them fails to run to completion and does not clean them up. This not only causes a space problem — as these files take up valuable disk space — but can also compromise your site's security as these files may contain potentially sensitive information, or may be executable PHP files. While the latter issue can be usually worked around by using the front-end protection mode in the .htaccess Maker feature of Admin Tools Professional, the proper solution is to periodically clean the contents of that directory.

Admin Tools Core and Admin Tools Professional include the Clean Temp-directory feature which will do that for you with a single click! More specifically, it will automatically remove all files and directories from your Temp-directory except `index.html`, `index.htm`, `web.config` and `.htaccess`, if any of those files exists.

Please note that Admin Tools will only remove files and folders created at least 60 seconds before you run this feature. This is a precaution to avoid accidentally deleting temporary files currently in use, e.g. the files Joomla needs to use while updating an extension.

Admin Tools lists the files and folders in your site's configured temporary directory and deletes them using Joomla's filesystem API. There are some points which arise from that:

- **NEVER, EVER, SET YOUR TEMPORARY DIRECTORY TO YOUR SITE'S ROOT OR ANY OTHER FOLDER THE CONTENTS OF WHICH YOU WOULD LIKE TO KEEP.** Admin Tools will not prevent you from doing something “obviously” silly so as not to prevent you from doing something clever. You are responsible for your choices and your actions. If you tell Admin Tools to delete the temporary folder's contents it will do so, EVEN IF you have mistakenly used a folder you want to keep as your temporary folder. In other words, nobody will stop you from shooting your feet.

- Your temporary directory is what you have configured in your site's Global Configuration page, in the Temp-directory option. If you see something like `tmp` or `/tmp` in there please note that it is NOT the same as the directory inside your site named `tmp`. The directory inside your site is a full path which usually looks like `/home/myuser/public_html/tmp`.

- If your temporary directory is outside your site's root or contains double dots (e.g. `../tmp`) Joomla! will *REFUSE* to list (and delete) its contents. This is not a bug in Admin Tools, it's how Joomla! itself is designed to work and is a sane security precaution we will never attempt to circumvent. Do note that a path like that will also prevent you from saving your site's Global Configuration.

- Being able to delete the contents of the directory depends largely on its permissions and the permissions of its contents. If Joomla! doesn't have directory listing permissions to this directory it can create temporary files just fine and delete them when it still knows their name (right after creating them), but not when Admin Tools asks it to list and delete the contents of the temp-directory. The reason is quite technical: Joomla! can't list the contents of the directory, therefore it can't know which files / folders it contains and as a result doesn't know what it has to delete. This is how filesystems work, not a bug in Admin Tools.

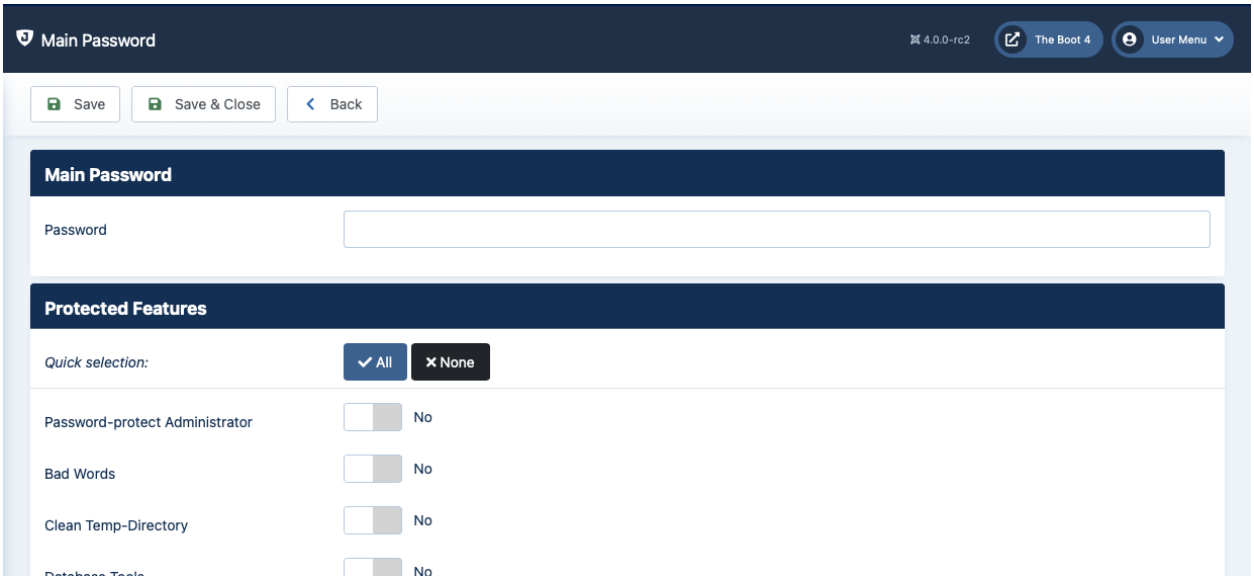
15. Protecting Admin Tools with a password

Warning

THIS IS NOT A SECURITY FEATURE. **THE MAIN PASSWORD IS STORED UNENCRYPTED IN THE SITE'S DATABASE**. This is meant as a safeguard against a less technical client inadvertently breaking the site or its security by toying around with Admin Tools' settings.

Sometimes you are not the sole administrator of a website, for example when there is a large administrative team or when you build the website for a client. In such cases you do not need everyone with back-end access to be able to modify Admin Tool's settings. Instead of giving you the traditional "all or nothing" access control imposed by Joomla! user groups, Admin Tools allows you to control access to any or all of its features using a "main password". The idea is that before any user is able to use one of the protected features, he has to supply the "main password" in Admin Tools' control panel page.

The Main Password page



When you click on the Main Password button in the Control Panel you get to the Main Password page where you can set both the password and select which features to protect.

The top area of the page allows you to set a Main Password. If you want to disable password protections, simply leave it blank.

The bottom area of the page lets you select which features will be protected. Set the radio button next to each feature you want to protect to "Yes" before clicking on the Save button. Features marked as "No" will be accessible by all back-end users. Featured marked with "Yes" will only be available to users who enter a valid password in the Control Panel page. This means that even Super Users will not be able to access the protected features without supplying a valid password.

If you want to quickly protect all features, click on the All button above the list. Conversely, clicking on the None button will disable Master Password protection on all features.

I have forgotten my password. Now what?

The only way to find out your password is to directly read it from the database. Use your host's database management tool —usually it's phpMyAdmin— to list the contents of your site's abc_admintools_storage table (where *abc_* is your site's table name prefix). Find the record in the table whose *key* value is "cparams" and take a peek at the contents of the *value* column. It contains a long text. At some point you will see something like `"masterpassword":"mypassword"`. The *mypassword* part is your main password.

16. Import and Exporting Settings

Sometimes you need to be able to import and export Admin Tools it. Some indicative use cases are:

- Backing up your Admin Tools settings before trying massive changes which could break your configuration
- Transferring your settings to another site on the same or an identical server
- Copying the IP white- and black-lists or email templates

You can do that through the Export Settings and Import Settings pages of the component.

Warning

Exporting and importing very large datasets (more than a thousand rows) IS NOT RECOMMENDED and CAN LEAD TO TIMEOUT ERRORS. This is a limitation of PHP, namely the memory_limit (maximum memory usage limit) and max_execution_time (maximum time to execute the page) imposed by your server's `php.ini`. Besides, it is a very bad idea having so many IP white-/black-list and/or email template rows as your site's performance would suffer. If you find yourself putting more than 100 records into these features you probably need to rethink your approach.

Exporting Settings

In this page you can choose which settings you want to export. The available options are:

WAF configuration	This includes all settings in the Configure WAF, .htaccess Maker, NginX Configuration Maker and Web.Config Maker pages.
	Warning These also include the domain names you have set up in the Allowed Domains (in Web Application Firewall) and the HTTP and HTTPS hosts (in the .htaccess Maker, NginX Configuration Maker and Web.Config Maker pages). When importing to a different site please make sure to go through these settings as well as any other settings which many reference server– or site–specific configuration to prevent getting locked out of your site.
WAF Deny List	This includes all entries of the WAF Deny List page.
WAF Exceptions	This includes all entries of the WAF Exceptions List page.
IP Disallow List	The permanently disallowed IP addresses from the IP Disallow List page
Exclusive Allow IP List	The allowed administrator IP addresses from the Exclusive Allow IP List page
Bad Words	This includes all entries of the Bad Words page.
User Agents to Block	This only includes the Blocked User Agents in the .htaccess Maker, NginX Configuration Maker and Web.Config Maker pages.

After selecting what you want to export click on the Export settings button in the toolbar. Your browser will download a JSON file with all of the selected configuration settings.

Note

It goes without saying that you should select at least one of these export options. Otherwise you will be downloading an essentially empty file that does nothing upon import.

Importing Settings

Choose the exported JSON file and click on the Import settings button in the toolbar. The imported settings will overwrite your existing settings.

17. Access Control

Admin Tools uses the standard Joomla access controls (Permissions) like every other Joomla component. To set this up you need to go to Components, Admin Tools and click on the Options button in the toolbar. Then, click on the Permissions tab. Each group can be setup with the following privileges:

Configure (the one on top)	Allows viewing and modifying component's Options.
Access Component	Allows the user to access the component's interface. This is a required permissions for the other permissions to make sense.
Utility	The user can use the utility features of Admin Tools. The features affected are: cleaning the temporary directory, component access (Control Panel), Emergency Off-Line Mode, fixing and configuring permissions, URL redirections, SEO and link tools.
Maintenance	The user can use the database maintenance features of Admin Tools. The features affected are: session cleanup and table optimization.
Security	The user can use the security features of Admin Tools. The features affected are: access control, administrator password protection, Web Application Firewall setup and associated tools (anti-spam bad words filtering, IP white and black list, log view), .htaccess Maker and Master Password.

18. The "System - Admin Tools" plugin

The "System - Admin Tools" plugin implements Admin Tools' security and utility features which need to run outside of the component, such the Web Application Firewall and the URL redirections feature.

When you edit the plugin's parameters please make sure that the Status is set to Enabled, the Access is set to Public (DO NOT CHANGE THAT TO ANYTHING ELSE — IT WILL LEAVE YOUR SITE UNPROTECTED!) and make sure that it's first in the Ordering.

Rescue Mode

The Rescue Mode allows Super Users of the site to quickly unblock themselves if their IP address is accidentally blocked.

Rescue URL (Joomla! 3.6 or later only)

When enabled (default) the Rescue Mode feature is enabled, allowing Super Users with blocked IPs to request a temporary Rescue URL which lets them log into the site and lift the block. We recommend leaving this feature enabled unless you know what you are doing. See the Rescue Mode section for more information.

Important

You will only receive the email to activate Rescue Mode if your IP is being blocked by Admin Tools. If your IP is NOT blocked by Admin Tools you will NOT receive any email. This is by design. It doesn't make sense to temporarily unblock yourself with Rescue Mode when you are not blocked!

Rescue duration (minutes)

How long is the Rescue Mode active. This controls two things:

1. The maximum amount of time between requesting a Rescue URL and visiting it.
2. The maximum amount of time between visiting the Rescue URL and the end of Rescue Mode.

We recommend leaving this setting to 15 minutes. Lower values tend to be very impractical.

Blocked requests reporting

The following options determine how Admin Tools handles and reports blocked requests.

Email language
: Admin Tools will send you emails to notify you of blocked requests when you enter an email address in WAF Configuration. By default, the current user's language (or your site's default language, if no user is currently logged in) is being loaded, which means that these emails will be sent out in this language. If you have a multilingual website it means that you may receive an email in any language available in your site. This can lead to confusion and makes it nigh impossible to set up any email filters. Therefore we give you this option. You can enter the language tag of the language in which you wish those blocked requests emails to be sent. For example, typing `en-GB` in this field will cause all emails to be sent out in English. If left blank (default) the current language loaded by Joomla! will be used.

Maximum block requests log entries
: Specify the maximum number of entries to keep in the blocked requests log. Excess records will be deleted. Use 0 to turn off this feature and keep all blocked requests log entries (recommended).

Note

If you have thousands of old entries it will take a while for Admin Tools to remove all of the old entries. Old records are deleted in 100 record batches on each page load for performance reasons.

Scheduled maintenance

Important

Scheduled Maintenance features in the System - Admin Tools plugin are deprecated and will be removed in a later version.

Please use Joomla's Scheduled Tasks feature (System, Manage, Scheduled Tasks) instead. You can create one or more tasks per scheduled maintenance feature and have them run on more flexible schedules that what has been possible with the System - Admin Tools plugin. Further to that, using Joomla's Scheduled Tasks allows the maintenance features to run **without** affecting the performance of your site.

The System - Admin Tools plugin allows you to automate some basic maintenance of your site.

Enable Session Optimizer
: When enabled, the Session Optimizer will be scheduled to run automatically. This feature will repair and optimize Joomla!'s sessions table.

Run every X minutes
: How often to run the Session Optimizer feature, in minutes

Enable Session Cleaner
: When enabled, the Session Cleaner will be scheduled to run automatically. This feature will purge (completely empty) and optimize Joomla!'s sessions table. Watch out! This will automatically log all users out of your site! You should only use it on sites where you don't expect to have logged in users at all, e.g. a company presentation site.

Run every X minutes
: How often to run the Session Cleaner feature, in minutes

Enable Cache Cleaner
: When enabled, the Cache Cleaner will be scheduled to run automatically. This feature will try to purge (completely empty) Joomla!'s cache. This is not possible on occasions, especially if you are using a cache adapter which doesn't support purging.

Run every X minutes
: How often to run the Cache Cleaner feature, in minutes

Enable Cache Auto-expiration
: When enabled, the Cache Auto-expiration will be scheduled to run automatically. This feature will try to expire and delete stale items in Joomla!'s cache. Unlike the Joomla! built-in feature, it

	will try to run this operation across all caches. This is not possible on occasions, especially if you are using a cache adapter which doesn't support automatic expiration control.
Run every X minutes	How often to run the Cache Auto-expiration feature, in minutes
Enable Temp-directory Cleaning	When enabled, your site's temporary directory will be periodically emptied of files and folders. It's the same as running the Clean Temp-directory feature from Admin Tools' Control Panel.
Run every X minutes	How often to run the Clean Temp-directory feature, in minutes
Delete inactive users	When this option is enabled, the Admin Tools plugin will automatically delete inactive users, i.e. users who registered on the site **but never logged in**. These are most likely spam registrations. On each page load, up to five inactive users will be deleted, to avoid slowing down your site. There are four different options:

Never	Disables this feature
Only if they haven't activated their account	Users who have never activated their account will be removed. If they have activated their account they will not be removed. Please note that if a user has logged into your site in the past but now appears deactivated e.g. because they asked for a password reset they WILL NOT be deleted.
Only if they activated, but never logged in	Users who have activated their account but never logged in will be removed. If they haven't activated their account yet, they will not be removed.
Activated or not, as long as they haven't logged in	Any user who has registered an account at least as many days ago as defined in the next option BUT has never logged into the site will be removed, no matter if they activated their account or not. This is a dangerous option! It's possible for a user to have paid for a user account but not bothered logging in just yet. This is common when a site developer purchases a subscription on behalf of their client so that

Delete after this many days	How many days must elapse between the registration date of an inactive user and its deletion. For example, if this option is set to 7 then if a user registers on your site on the 1st of the month and has not logged in at least once by the eighth of the month, his user account will be removed.

All scheduling and expiration options are assessed on a best-effort bases. This means that they will try to run every X minutes, but only as long as there is enough visitor traffic on your site to trigger them. In any other case they will defer their execution for when there is visitor traffic.

Automatic settings import (“Sync server”)

Important

The Automatic Settings Import feature in the System - Admin Tools plugin is deprecated and will be removed in a later version.

Please use Joomla's Scheduled Tasks feature (System, Manage, Scheduled Tasks) instead. You can create one or more settings import tasks and have them run on more flexible schedules that what has been possible with the System - Admin Tools plugin. Further to that, using Joomla's Scheduled Tasks allows the settings import to run **without** affecting the performance of your site.

Some larger / busier web agencies tend to have dozens to hundreds of sites which use roughly the same mix of extensions. In these cases a small tweak in the Admin Tools setup of one site usually has to be propagated to every other site in their portfolio. This can be a tedious process.

Admin Tools gives you the option to have a “sync server” of shorts. The idea is that you will have a JSON file with Admin Tools settings in a URL that's publicly accessible. Every so often your sites will check out this URL and import the settings. This URL could be on your web server, a Dropbox account, an S3 bucket and so on.

The JSON file in that URL can be generated by going to Admin Tools' Import/Export Settings page. The idea is that you modify the configuration of one site and export its settings in a JSON file. You can edit that file if necessary. Then upload it to where it can be found using the public URL you've configured on all other sites. Wait for the requisite number of hours to pass and now all your sites have been synced to those settings.

The relevant settings for each site are:

Automatic import URL	URL pointing to Admin Tools JSON settings that should be imported.
Automatic import frequency (hours)	How often (in hours) to read the remote URL and import its contents into the Admin Tools installation

19. Automating maintenance tasks

Note

This feature is only available in Admin Tools Professional, the for-a-fee edition of our software.

Admin Tools Professional allows you to automate site maintenance tasks using Joomla's Scheduled Tasks [https://docs.joomla.org/Help4.x:Scheduled_Tasks] feature.

Preparing your site

By default, Joomla Scheduled Tasks **will not run at all, ever**. Something needs to periodically remind Joomla to check if there are any scheduled tasks to run and, if so, execute them. Joomla provides three triggering methods for its scheduled tasks:

1. **CLI CRON jobs**. This is the most reliable triggering method. You set up one CRON job which runs every minute and tells Joomla to look for any pending tasks and execute them. This method is only suitable for hosts with real, CLI CRON jobs.

   You need to set up a CRON job to run the command

   ```
   /usr/bin/php /path/to/site/cli/joomla.php scheduler:run --all
   ```

   where `/usr/bin/php` is the full filesystem path to the PHP CLI executable and `/path/to/site` is the full filesystem path to your site. These items are host-specific. We are not your host, therefore we cannot possibly know what these are; please ask your host, that's what you are paying them for. Likewise for how to set up CRON jobs on your site's server.

   Important! This CRON job must be set up to run every minute of every hour of every day.

2. **“Web Cron” (URL-based CRON job)**. This is the second most reliable triggering method. You set up a CRON job which accesses a special URL on your site every minute and tells Joomla to look for any pending tasks and

execute them. This method is suitable for hosts which only allow URL-based pseudo-CRON, i.e. accessing a URL periodically. We DO NOT recommend using this method with a third party service (such as webcron.org) because it gets very expensive, very fast. If your host does not support real or URL-based CRON jobs you are better off using the other automation methods mentioned earlier in this documentation.

1. Go to your site's backend, System, Managed, Scheduled Tasks.
2. Click on the Options button.
3. Click on the Web Cron tab.
4. Set the Web Cron option to Enabled.
5. Click on the Save button on the toolbar.
6. When the page reloads click on the Web Cron tab again.
7. Copy the “Webcron Link (Base)” contents. It's a URL similar to `https://www.example.com/component/ajax/?plugin=RunSchedulerWebcron&group=system&format=json&hash=f0oB4r`.
8. Create a CRON job to access this URL every minute of every hour of every day.

3. **Lazy Scheduling**. This is the least reliable method. Your scheduled tasks are only executed when there is visitor traffic on your site. This means that your scheduled maintenance tasks may not be executed exactly when you have scheduled them to run or, in the case of low traffic or intermittent traffic sites with a large number of tasks, not at all.
    1. Go to your site's backend, System, Managed, Scheduled Tasks.
    2. Click on the Options button.
    3. Click on the Lazy Scheduler tab.
    4. Set the Lazy Scheduler option to Enabled.
    5. Click on the Save & Close button on the toolbar.

You are responsible for setting up one of these trigger methods on your site. Again, bear in mind that Joomla does not have any of these set up by default, meaning that no scheduled tasks will execute.

Unfortunately, we cannot provide any support for setting up the execution of Joomla Scheduled Tasks. It's your responsibility to ensure that Scheduled Tasks do work on your site and you need to understand the limitations of each method, especially Lazy Scheduling. As a result we cannot offer any support for scheduled tasks which have not started at all; start at the “wrong” time; take “too long” to finish; or do start but not finish at all without returning an error. This is all part of how Joomla operates.

Task types

The Task - Admin Tools plugin registers a number of *task types* for Joomla Scheduled Tasks. You will need to create new tasks and set them on a schedule of your choosing for one or more of these task types for scheduled maintenance tasks to be executed on your site.

You can create new scheduled tasks in your site's administrator backend by going to System, Maintenance, Scheduled Tasks and clicking on the New button in the toolbar.

Admin Tools' task types are described in the sections below.

19.1. Admin Tools – PHP File Change Scanner

This task type is used to scan your site for added and modified .php files, as well as assess their potential risk with the PHP File Change Scanner.

This task is documented separately since it conceptually belongs to the PHP File Change Scanner automation. You still need to have the Task - Admin Tools plugin installed and enabled for this task type to be available.

19.2. Admin Tools – Blocked Requests Log cleanup

Admin Tools records every request it has blocked as suspicious in the #__admintools_log table. This information is used to determine when to block certain IP addresses based on the criteria in the Auto-ban tab of the Configure WAF page of the component. It is also used to present statistics on blocked requests in the Admin Tools' Control Panel page.

The problem is that this table can become big. Really big. Millions of records big. This makes it slower, consumes database space for no good reason and become more prone to breaking for reasons that have to do with how MySQL handles very large tables with a large volume of reads and writes.

It is strongly recommended to keep its size relatively small. How small? This depends on each site. You need to keep enough records on that table to let the Auto-Ban work correctly and possibly to display accurate statistics for the last 30 days. That's why there is no hard-coded rule on how many records to keep on that table.

This task type allows you to periodically clean up the table and keep a certain number of records. It is recommended to use a value between 1000 (one thousand) on small sites and 100000 (one hundred thousand) on larger sites. You can set that up in the Maximum blocked requests log entries option of the task.

We recommend running this task between once every two hours on very busy sites to once a week on sites with not that much traffic.

19.3. Admin Tools – Session table repair & optimise

Joomla stores its session metadata in the #__session database table — as long as the “Track Session Metadata” option is enabled in your site's Global Configuration.

By the nature of this feature, the #__session database table gets a high volume of read / write operations. For reasons that have to do with how MySQL works this can cause the table to have a lot of wasted space, making it slower, or even stop accepting new writes. In the former case page loads will take longer to complete, even for Guest (not logged in) visitors to your site. In the latter case you may find it impossible to log into your site or even that some or all pages of your site no longer work.

It is possible to avoid this situation by asking MySQL to optimise this database table, removing wasted space. Moreover, if the table appears to be broken we can ask MySQL to attempt to repair it. This is what this task type does.

We recommend running this feature once an hour on very busy sites and once a day on sites which receive a lower volume of traffic.

19.4. Admin Tools – Clean up session metadata

Joomla stores its session metadata in the #__session database table — as long as the “Track Session Metadata” option is enabled in your site's Global Configuration.

Joomla does this for all user sessions, even Guest (not logged in) sessions. This also means that each and every hit by a search engine counts as a different session since search engines do not store cookies, therefore do not let Joomla keep track of a single session when they are indexing your site.

On sites with a lot of traffic, even if it's traffic from Guest users, this can create a lot of “dead” session metadata table records, i.e. a lot of records on that table which do not correspond to active sessions. This can inflate the size of the session metadata database table, making your site slower.

This task type can locate these records and remove them, keeping the size of that table in check, ensuring that your site's performance will not degrade over time.

We recommend running this task every twice as much as your session lifetime as defined in the Joomla Global Configuration but not less than once per day. For example, if your session lifetime is 60 minutes (one hour), run this task once every two hours. If your session lifetime is 1440 minutes (one day), run it once a day — *not* once every two days.

19.5. Admin Tools – Cache clean-up

If you have turned on the System Cache in Joomla's Global Configuration you will see that Joomla caches generated pages based on the user groups the currently logged in user is assigned to, as well as other data specific to each extension. This may cause a lot of cached data to be stored which are essentially used by only a few users or even a single user only. The expired cache is not deleted automatically which means that you are wasting disk space or memory, depending on your cache type. You need something to clean up the expired cache periodically. This task type can do that when you set its Clean-up type option to `Expired Only`.

Further to that, some sites may be updating their content with a scheduled task or with some other means which does not go through Joomla's web interface. While the Joomla interface will clean up the relevant cache section (e.g. com_content for Articles content) when you save or update content in its core components — and most third party components do the same — if you are skipping the Joomla interface this may not happen at all. This would mean that Joomla might be service the cached content. In some cases this can be a significant problem if you need to provide time-sensitive information, e.g. if you are listing availability of in-stock items being sold at a fire sale, currency exchange rates etc. In most cases it might not be practical disabling the system cache in Global Configuration for performance reasons but you'd still like to have Joomla's cache cleaned up periodically to avoid issues related to serving stale content. This task type can do that when you set its Clean-up type option to `Delete All`.

19.6. Admin Tools – Clean up the temporary directory

Joomla has a temporary directory where Joomla itself and third party extensions can store files needed only for a short period of time, typically for the lifetime of a request. Normally, these files are deleted automatically when they are no longer needed. Sometimes, however, a number of server, network or programming issues may result in the premature termination of the page working on this data, leaving unneeded files behind cluttering your site's disk. For example, if an extension installation fails with a timeout or a PHP fatal error the extracted files of that extension may be left behind.

This task type will remove all files and folders under the temporary directory which have not been updated in the last 60 seconds. This time limit is long enough to allow legitimate long running use cases, such as extension installation, to work without accidentally removing the files they are operating on.

We recommend running this task once a day, during the off-hours of your site.

Important

Before turning this option on make sure that your configured temporary directory IS NOT your site's root or any other directory which contains important files you need to keep, such as Joomla's media, components or plugins directories. Akeeba Ltd carries no responsibility for user errors which result in the deletion of important files and documents.

19.7. Admin Tools – Delete inactive users

If you run a Joomla site for more than a couple of months you may have noticed that there are a lot of user accounts which appear to be unactivated or have been activated but never logged in. There are typically three reasons for them:

- Spam registrations. A spam bot registered a user account in the hope that it would be automatically approved and give them access to post information on your site, allowing them to submit spam. These accounts are typically unactivated and never logged in since the spam bot cannot follow through the default email self-registration process in Joomla.
- A real human tried to create an account and either didn't receive the email from your site to activate their account (their account appears unactivated and never logged in) or went through the activation but changed their mind (their account appears activated and never logged in).
- A real human asked for a password reset. This makes their account appear as not yet activated but there is a last logged in date.

This task type allows you to delete these user accounts. There are three options for the Delete inactive users preference in this task type:

Only if they activated, but never logged in
: Deletes all users who appear to be activated but have never logged in.

  Warning

  In some cases these may be legitimate user accounts you do not want to delete. For example, someone may have purchased a subscription on your site to gift to another person. During that time they might not have logged in to your site yet, depending on how the purchase system on your site works.

Only if they haven't activated their account
: Deletes all users who appear to be not activated.

  This will NOT delete user accounts which have a Last Reset Time set in their user account. This prevents accidentally deleting users who have simply asked for a password reset and have not yet completed the password reset process.

  This is a change from the legacy behavior of the similar feature in the System - Admin Tools plugin which would naively remove users who have asked for a password reset.

Activated or not, as long as they haven't logged in
: Deletes all users without a last logged in date.

  Warning

  In some cases these may be legitimate user accounts you do not want to delete. For example, someone may have purchased a subscription on your site to gift to another person. During that time they might not have logged in to your site yet, depending on how the purchase system on your site works.

The Delete after this many days setting is used to determine when to delete users. Only users who have created an account at least this many days ago will be considered for deletion. This allows you to give a "grace time" to users to activate their account and / or log into your site for the first time before they are targeted for account removal. We recommend setting this to somewhere between 7 and 30 days. Sometimes email gets lost, they might need to contact you or, generally *real world life* happens — we've had legitimate users who got hospitalised right after they created an account, creating a gap of several days between account activation and first login.

19.8. Admin Tools – Auto-import configuration

Some larger / busier web agencies tend to have dozens to hundreds of sites which use roughly the same mix of extensions. In these cases a small tweak in the Admin Tools setup of one site usually has to be propagated to every other site in their portfolio. This can be a tedious process.

Admin Tools gives you the option to have a “sync server” of shorts. The idea is that you will have a JSON file with Admin Tools settings in a URL that's publicly accessible. Every so often your sites will check out this URL and import the settings. This URL could be on your web server, a Dropbox account, an S3 bucket and so on.

The JSON file in that URL can be generated by going to Admin Tools' Import/Export Settings page. The idea is that you modify the configuration of one site and export its settings in a JSON file. You can edit that file if necessary. Then upload it to where it can be found using the public URL you've configured on all other sites. Wait for the requisite number of hours to pass and now all your sites have been synced to those settings.

This task type can automate the import of this JSON file. It has only one option.

Automatic import URL | URL pointing to Admin Tools JSON settings that should be imported.

Important

We do not recommend exporting the .htaccess Maker, NginX Conf Maker or Web.config Maker configuration in this context. The configuration for these features includes the domain name and path of the site they were exported from. Applying these settings to a different site will cause loading issues on that site.

20. Rescue Mode

Sometimes your Admin Tools configuration can result in accidentally blocking yourself, a Super User, from the site. Normally that would require you to rename the `provider.php` file of Admin Tools' system plugin to unblock yourself. This can be rather stressful and complicated for some people.

The Rescue URL feature works around that problem in a secure and elegant manner. First you visit a special URL, including your Super User email address. An email is sent to you with a "magic" link called the Rescue URL. Clicking on that link lets you log in to your site's administrator area without Admin Tools' protections getting in your way. You can then unblock yourself and / or modify the Admin Tools configuration which caused your IP address to be blocked in the first place.

How to use the Rescue Mode

Important

Rescue Mode is only available on sites running Joomla! 3.6.0 and later and Admin Tools 4.3.0 or later. Also note that if you are not the only Super User on your site, or if you used another company / freelancer to build your site, it's possible that they have turned off Rescue Mode. If these instructions don't work you should assume Rescue Mode is not available or disabled on your site.

Assuming that your site's URL is *`http://www.example.com`* and your Super User email address is *`you@example.com`* you need to visit the following URL to request a Rescue URL to be sent to you:

`http://www.example.com``/administrator/index.php?admintools_rescue=`*`you@example.com`*

You will see the message "Check your email for Rescue URL information" printed on your screen.

Check your email. You will receive an email from your site with a Rescue URL.

Important

You will only receive the email to activate Rescue Mode if your IP is being blocked by Admin Tools. If your IP is NOT blocked by Admin Tools you will NOT receive any email. This is by design. It doesn't make sense to temporarily unblock yourself with Rescue Mode when you are not blocked!

The Rescue URL looks like this:

http://www.example.com/administrator/index.php?
admintools_rescue_token=4vJPFH8pkpFdVkjz0Ej7VUi6gUt39lmkMS36sjmQV6hCTZZ36b2snqWVY6PrxqHdvyb4B3DI8VSUyLbM

Do note that the part after admintools_rescue_token is very long and completely random. Also note that it's only valid for use from the SAME browser and IP address that you requested a Rescue URL to be sent to you. The link is only valid for a short period of time (default: 15 minutes). All of that is done for security reasons!

Visit the Rescue URL either by clicking on it or by copying it and pasting it to your browser's address bar. If all goes well you will see your site's administrator backend login page or the Joomla! administrator control panel. If you see the login page just log in with the Super User account which corresponds to the email you used when requesting a Rescue URL to be sent to you.

Tip

If you were logged in as a different Super User account you will still be blocked. You will need to repeat this process using the email address of the Super User account you were logged in with on your site. Alternatively, use your browser's Private Browsing mode to request and visit the Rescue URL.

Now you can go to Components, Admin Tools and unblock yourself. Remember that you have a limited period of time (default: 15 minutes) for security reasons!

Tip

Don't know how to unblock yourself? No problem! Going to Components, Admin Tools you'll see a message with a link to step by step instructions.

Rescue Mode and security

Rescue Mode was designed with security in mind. There's no point having a security extension if there's an easy backdoor to it! We have ensured security by taking several measures.

First and foremost, the Rescue Mode only applies to the administrator backend. The frontend of your site is not affected. This means that nobody can abuse it to subvert Admin Tools' protection of your public site.

When you are requesting a Rescue URL you must be already blocked from accessing the backend of the site and know the Super User's email address. If your backend login page is protected by a .htaccess password (a.k.a. Administrator Password Protection) you will need to supply that before the request has any effect.

A very long (96 random alphanumeric character), single use, limited validity time (default: 15 minutes) token is generated when you make the request. This has about 160 bits of randomness which means that there are more than 1,460,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000 possible combinations. This is practically impossible to guess. Moreover, it's stored hashed using the same technology as your Joomla Super User password to prevent side-channel attacks, i.e. an attacker using a possible vulnerability in any part of your site / server to perform an unauthorized read of database information.

The token itself can only be used by the same browser and IP address that requested the Rescue URL. This means that phishing attacks wouldn't work. An attacker cannot fool you into opening a backdoor to your site for them. In fact, a potential attacker would need full access to your email to pull of an attack. Of course if they have full access to your email account they can do far more dangerous things, like having your hosting company hand over control of the domain to them, i.e. you'd be thoroughly hacked. Therefore the email portion of Rescue Mode does not constitute a viable attack vector.

When you visit the Rescue URL the token is immediately invalidated (it cannot be used again) and data is written to your session. This data is what acts as a temporary key to disable Admin Tools' protections only for you and only

for the site's administrator. Furthermore you MUST log in, or already be logged in, with the same Super User as the one whose email you used when requesting a Rescue URL. If you try to log in with a different user the Rescue Mode is immediately canceled.

The Rescue Mode only temporarily disables Admin Tools' security checks. It does not remove Joomla's own security checks or any third party extensions. Therefore if you are using Two Factor Authentication / Two Step Authentication to verify your login it will still be required for you to log in to your site. This means that even in the unlikely event of you being fully compromised (including control of your email account AND your Super User username and password) the attacker would still be stumped by Two Factor Authentication.

Furthermore, the Rescue Mode is only active for a limited amount of time (default: 15 minutes) since you access the Rescue URL. This means that even if you use a loaner computer you won't end up with a browser that has a backdoor to your site's login page. We also include a button in the Admin Tools control panel page to immediately end Rescue Mode -even if it's not expired- for additional control and security.

Finally, Rescue Mode is opt-out. This means that you can disable it by editing the System - Admin Tools plugin options and setting the Rescue URL option to No.

Discoverability and message customization

Features like this are useless if they are simply buried in the documentation. Admin Tools displays information about the Rescue URL in three places, **as long as you have not modified the default options**.

First on all, when a blocked request is raised the visitors see a message informing them they did something they shouldn't have done. You can customize this in the Configure WAF page, Customisation tab, Custom Message option. If that option is left blank the default message generated by Admin Tools contains information about unblocking yourself.

The second place where this is displayed is the message shown to blocked IPs. You can customize that in the Configure WAF page, Auto-ban Repeat Offenders tab, Show This Message To Blocked IPs option. If you leave this blank or if you use the default message ("You are a spammer, hacker or an otherwise bad person.") the information about unblocking yourself will be appended to the end of the message.

Moreover, Admin Tools will automatically append the information about unblocking yourself to the default content of the blocked request and IP auto-ban emails (i.e. reasons `all` and `ipautoban`) shipped with Admin Tools. You can customize these emails from the Web Application Firewall, Email Templates page.

If you customize these messages and / or emails you can instruct Admin Tools to include the default Rescue URL information by adding the code [RESCUEINFO] in all caps, including the brackets, anywhere in the two messages or the body of the email templates. The rescue info typically reads something like:

If you are the administrator of this site and have blocked yourself on accident please visit https://www.example.com/administrator/index.php?admintools_rescue=you@example.com where you@example.com is the email address of your (Super User) account.

You can customize this information message by creating a standard Joomla! language override [https://docs.joomla.org/J3.x:Language_Overrides_in_Joomla] for the translation string `PLG_ADMINTOOLS_MSG_BLOCKED_RESCUEINFO`.

Important

For security reasons, we strongly recommend that you change the Custom message and Show This Message To Blocked IPs messages described above to NOT include any reference to Admin Tools and / or the procedure to unblock yourself. You MUST NOT tell the world how you are protecting your site. Not disclosing this information is yet another hurdle for a potential attacker, making it less likely that they will spend time to attack your site.

21. Troubleshooting guide

If you can not find something in our user's guide and you are a subscriber, please post to our support ticket system. Please indicate that you have read this page and the documentation (mention which parts of the documentation you read trying to find the information) in your post. Thank you.

21.1. — THIS HEADER IS INTENTIONALLY LEFT BLANK —

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21.2. Administrator password protection issues

Help! I am locked out of my site's administrator area!

This feature works by placing two file, `.htaccess` and `.htpasswd` inside your site's `administrator` directory. If you forget the username/password you used for this feature and you are locked out of your site, please follow this procedure:

1. Using your favourite FTP, FTPS or SFTP application, e.g. FileZilla or CyberDuck, log into your site and go into your site's root
2. Go inside the `administrator` directory

   Warning

   DO NOT SKIP THIS STEP or you will be removing the wrong file, causing a big problem on your site (especially if you're using SEF URLs).

3. Remove both the `.htaccess` and `.htpasswd` files. If you do not see those files, create two empty text files in your computer, rename them to `.htaccess` and `.htpasswd` and upload them.

I enabled this feature and now the front-end of my site asks me for a username and password?!

This is not a bug in Admin Tools, but a problem with one of the extensions (components, modules or plugins) you are using.

More specifically, Joomla! extensions are not supposed to load anything from the administrator area of your site in the front-end. However, some badly written extensions try to access static media files (CSS, Javascript, images) from directories inside the administrator directory. On notorious example is the Zoo CCK extension. Since all of the contents of your administrator directory are protected with a username/password, your browser will prompt you for one as soon as it is instructed to download a file from that protected directory or any of its subdirectories.

There are two workarounds:

1. Disable the administrator password protection. This degrades your site's security but is the easiest and most immediate change.
2. Consult the developer of the offending extension and explain to him that loading files from the administrator area of the component in the front-end of the site is insecure and he has to resolve this issue. Hopefully, developers will realize that this practice is unsafe and fix their software.

500 Internal Server Error when enabling this feature

If after applying the password protection you immediately receive a blank page or an Internal Server Error 500 instead of a password prompt, your server is not compatible with the password protection scheme. In this case, the only way to gain access to your site's administrator back-end is to remove the `.htaccess` and `.htpasswd` files from your administrator directory using an FTP application or the File Manager in your site's hosting control panel. If in doubt, consult your host about how you can do that before trying to apply the password protection. If those files do not show up in your FTP client, please create two blank files with those names and upload them to your site, overwriting the existing (but invisible) ones. This will remove the password protection so that you can regain entrance to your administrator back-end.

404 Not Found error page or Joomla error page when enabling this feature

Ask your host to disable Apache custom error pages for HTTP status codes 401 and 403.

But why does this happen? (Optional, detailed information; you don't have to read the next paragraphs).

When you enable password protection all you're doing is create a .htaccess file. This tells Apache, your web server, that the administrator directory is password protected. The next time your browser tries to access anything in that directory it has to send an HTTP Basic Authentication header that contains your username and password. If it doesn't Apache returns an HTTP 401 status which, in turn, instructs the browser to ask you for the username and password (and then store it in its authentication cache for the browsing session). This is how your browser knows it needs to ask you for a username and password.

However, HTTP 401 is technically an HTTP error status. Apache has a feature called custom error pages. Depending on the HTTP error status returned (all 4xx and 5xx codes) you can configure Apache to return a static HTML page with custom content to the browser when it sends the error code. This holds true even for the 401 status described above. **The real cause of the problem you are facing is that the configured custom error page does not exist**. This causes Apache to internally report the file as missing. This breaks the authentication flow and would normally trigger a 404 Not Found error page.

If that wasn't bad enough, Joomla is always configured to catch all missing files and try to figure out if it should try and serve a Joomla page instead. This is required for the correct operation of search engine friendly URLs. So, Joomla sees the missing file error. Not knowing what to do with it, it tries to route it through com_content (the built-in Articles component). Hard as it may try, it can't find an article category which matches the URL. This causes Joomla to throw an error. This is what ends up being displayed as the 404 or Joomla error page you are receiving.

When you disable custom error pages for the 401 error code you let Apache communicate that status directly to the browser without Joomla interfering. This lets the password protection work properly. FYI, the aforementioned error will also take place if you use your hosting control panel's directory password protection feature. It is not caused by Admin Tools. It is caused entirely by your server's configuration. Also note that most hosts do let you define and reset custom error pages through the hosting control panel.

21.3. New Super Users are blocked and deactivated after login

This happens when you add a new Super User and you manually deactivated Admin Tools. This means that Admin Tools has no records about you creating the Super User, so it thinks it's a malicious user.

Before continuing, let's solve the root cause of this issue. Most likely you got a 403 error creating a new Super User and as temporary solution you manually disabled Admin Tools. Please check this page of the troubleshooter to find the correct solution for this problem.

Then enable Super User monitor feature and get inside the profile of the user that was disabled. Save it without changing anything. In this way Admin Tools should record the new Super User being a legit one. Try again to login with the user that was previously blocked; you should be able to use it, now.

21.4. Can not create or edit Managers, Administrators, Super Administrators using Admin Tools (403 error thrown)

Admin Tools Professional contains a feature called Web Application Firewall, or WAF for short. One of the security features applied by WAF is to block editing or adding Managers, Administrators and Super Administrators.

Please go to Components, Admin Tools and click on the Web Application Firewall button. In the new page, click on WAF Configuration. Find the Disable editing backend users' properties option and set it to No. Now you can create and edit all users on your site. For security reasons, remember to re-enable this option after you're done adding/editing users!

21.5. Locked out of my site after applying a .htaccess using Admin Tools' .htaccess Maker

Sometimes, when you apply a .htaccess file on your site, you get a blank page or an Internal Server 500 error message when trying to access your site's front- or back-end. Working around this is simple:

1. Using your favourite FTP application, e.g. FileZilla or CyberDuck, go to your site's web root
2. Find the `.htaccess` file and rename it to `htaccess.bak`. If you do not see the `.htaccess` file listed there, create a blank text file on your local machine, rename it to `.htaccess` and upload it to your site. It will overwrite the existing one.
3. Log back in to your site's back-end, go to Components, Admin Tools, .htaccess Maker, disable some options and then click on Save and apply .htaccess.
4. If this produces the same error, repeat this procedure. Do note that different servers support different features of our .htaccess Maker. There is no way to know beforehand. Making the perfect .htaccess for your site is a trial-and-error process.

Important

If you are on GoDaddy, please note that changes on .htaccess files (or removing them completely) take anywhere between 10-30 minutes to become effective.

21.6. Admin Tools' Web Application Firewall (WAF) locked you out of your site

It's easy to be overzealous and apply very strict security settings for the Web Application Firewall of Admin Tools. An overzealous configuration, a misbehaving third party extension or a misconfigured server can cause you to be accidentally locked out of your own site. Here we'll see how to fix that.

Step 1. Regain access to your site's administrator

There are two ways to regain access to your site, Rescue Mode and FTP.

Using the Rescue Mode to regain access to your site's administrator

Important

Note that if you are not the only Super User on your site, or if you used another company / freelancer to build your site, it's possible that they have turned off Rescue Mode. If these instructions don't work you should assume Rescue Mode is not available or disabled on your site.

Assuming that your site's URL is *http://www.example.com* and your Super User email address is *you@example.com* you need to visit the following URL to request a Rescue URL to be sent to you:

http://www.example.com/administrator/index.php?
admintools_rescue=*you@example.com*

You will see the message "Check your email for Rescue URL information" printed on your screen.

Check your email. You will receive an email from your site with a Rescue URL. The Rescue URL looks like this:

http://www.example.com/administrator/index.php?
admintools_rescue_token=4vJPFH8pkpFdVkjz0Ej7VUi6gUt39lmkMS36sjmQV6hCTZZ36b2snqWVY6PrxqHdvyb4B3DI8VSUyLbM

Do note that the part after admintools_rescue_token is very long and completely random. Also note that it's only valid for use from the SAME browser and IP address that you requested a Rescue URL to be sent to you. The link is only valid for a short period of time (default: 15 minutes). All of that is done for security reasons!

Visit the Rescue URL either by clicking on it or by copying it and pasting it to your browser's address bar. If all goes well you will see your site's administrator backend login page or the Joomla! administrator control panel. If you see the login page just log in with the Super User account which corresponds to the email you used when requesting a Rescue URL to be sent to you.

Tip

If you were logged in as a different Super User account you will still be blocked. You will need to repeat this process using the email address of the Super User account you were logged in with on your site. Alternatively, use your browser's Private Browsing mode to request and visit the Rescue URL.

Now you can go to Components, Admin Tools and unblock yourself. Remember that you have a limited period of time (default: 15 minutes) for security reasons!

Using FTP to regain access to your site's administrator

The failsafe way to regain access to your site's administrator backend is using an FTP application or your hosting control panel's File Manager to rename a file.

Go inside the `plugins/system/admintools/services` directory. You will see a file named `provider.php`. Rename it to `provider-disable.php`. This will turn disable the Web Application Firewall from executing and you can access your site's back-end again.

After you have fixed the cause of your issue remember to rename `provider-disable.php` back to `provider.php`, otherwise your site will remain unprotected!

If you are still blocked

There are two cases where the Rescue URL feature, or renaming the Admin Tools system plugin's file, will not help you. These are the two cases where Admin Tools has created a *server* configuration file, meaning that you are blocked by *your server*, not Admin Tools.

The first case is the Administrator password protection feature. Please delete the files named `.htaccess` and `.htpasswd` from your site's `administrator` directory.

The other case is when you've used the .htaccess Maker feature of Admin Tools. In this case there's a `.htaccess` file in your site's root. You may want to replace its contents with the default Joomla! .htaccess file content [https://raw.githubusercontent.com/joomla/joomla-cms/staging/htaccess.txt].

In both cases you should not that the files have names beginning with a dot. That makes them hidden. You will need to enable the display of hidden files to edit / delete those files. If you are unsure how to do that please ask your host and tell them that you need to edit/delete hidden files. Usually they will point out an option in their hosting control panel's file manager.

If you are still blocked your issue is unfortunately unrelated to Admin Tools. Do you have another security plugin on your site? If you do, check its settings. If not, check with your host. More often than not, hosts have their own server security systems which can block you out of your site. If you are unconvinced follow the the instructions under "Using FTP..." above. Doing that you prevent Joomla! from loading Admin Tools' code *at all*. If you can reproduce your issue when Joomla! cannot load Admin Tools' code you can be certain that your issue is completely unrelated to Admin Tools. Code which isn't loaded cannot run. Code which doesn't run cannot affect your site.

Step 2. Unblock yourself

In most cases the easiest way to unblock yourself is simply going to Components, Admin Tools and click the big Unblock My IP button. If this doesn't work, or the button is not visible, follow the instructions below.

Do remember to end the Rescue Mode or renamed back main.php after you're done unblocking yourself!

Automatically banned IP address

Go to Web Application Firewall and click the Exceptions Log button. Delete all records with your own IP address. Then, go back to Web Application Firewall and click on the Auto IP Blocking Administration button. Select the record showing your IP address and click on the Delete button to delete the block.

Tip

Don't know what your IP address is? Just visit whatismyipaddress.com [http://whatismyipaddress.com] to find out!

If this problem keeps happening without you doing anything and the IP blocked is NOT the same as the one reported by whatismyipaddress.com [http://whatismyipaddress.com] you will have to do one more thing. Go to Components, Admin Tools, Web Application Firewall and click on the WAF Configuration button. In the first tab set Enable IP workarounds to Yes, no matter what the automatically detected recommendation is.

If that was not the case, you have two options. The first is to troubleshoot the reason of the ban. Go to Components, Admin Tools, Web Application Firewall, Security Exceptions Log and check the Reason and Target URL for the entries which have your IP address in the IP address field. Find the reason in the "List of blocking reasons" documentation page [https://www.akeeba.com/documentation/admin-tools-joomla/waf-log.html#waf-log-reasons] to find out why you're being blocked. If you are not sure what that means, please file a support ticket [https://www.akeeba.com/support/admin-tools.html] remembering to copy the information from the Security Exceptions Log. Kindly note that you need to have an active subscription to receive support.

The second option at your disposal is adding your IP address to either of the IP whitelists, as follows.

The first approach is to add your IP address to the Administrator IP Whitelist. Using this option will limit access to the administrator section of your site only to the IPs listed in the whitelist. We strongly recommend you to not use it unless you and all of your back-end users have static IP addresses. In all other cases you may get blocked out of

your site. Go to Components, Admin Tools, Web Application Firewall and click the Administrator IP Whitelist button. Add your own IP address.

The second approach is to use the Safe IP List. All IPs in that list will not be automatically banned. In order to do that, go to Components, Admin Tools, Web Application Firewall and click on the WAF Configuration button. Inside the Auto-ban Repeat Offenders area find the Never block these IPs field. This is a comma-separated list. Add the IPs you want to never be automatically blocked separated by commas on that list.

Administrator IP Exclusive Allow List

If you have enabled the administrator exclusive allow IP list you have to make sure that your IP address is included in the exclusive allow list to be able to access your site. Go to Components, Admin Tools, Web Application Firewall and click the Administrator IP Exclusive Allow List button. Add your own IP address.

Warning

Don't use the Administrator IP Exclusive Allow List if your ISP assigns an IP address dynamically. This is the default unless you are paying them extra for a "static IP".

IP Deny List

If you have enabled the IP Deny List you have to make sure that your IP address is not included in the blacklist in order to be able to access your site. Go to Components, Admin Tools, Web Application Firewall and click the Site IP Deny List button. Remove your own IP address.

Administrator Secret URL parameter

If you have forgotten your Administrator Secret URL parameter go to Components, Admin Tools, Web Application Firewall, Configure WAF, click on the Basic Protection Features tab and find the Administrator secret URL parameter option. Change or remove all of the text in that box to reset or unset, respectively, this feature.

21.7. My components, modules or templates stopped working after using Admin Tools .htaccess Maker and how to determine and apply exceptions

When you use our .htaccess Maker, it writes a .htaccess file which -by default- applies extremely tight security settings. The immediate result is that some third party extensions which use potentially unsafe practices no longer work properly or at all.

You can determine and apply exceptions following our documentation's instructions.

21.8. I created a .htaccess file on my main site and I can't access my other domains / subdirectories on the same account

There are two ways this problem can manifest itself.

1. You have another site in a subdirectory of your main site. Trying to access the subdirectory results in an error.

2. You have a subdomain or add–on domain in your hosting account. Trying to access it you get an error.

In both cases the problem is that the web root of the additional site, subdomain or add–on domain is a subdirectory of your main site.

Your web server applies the .htaccess file settings in a *cascading* manner. This means that it does NOT just parse the .htaccess file in the directory you are accessing but also the .htaccess files in all parent directories, all the way to the root of the filesystem. Let's give an example. If the URL `https://subdomain.example.com` is served from the directory `/home/example/public_html/subdomain` the web server will do the following when accessing this URL:

- Start with the settings in the web server's configuration. These are the settings parsed when the web server daemon (the background process that handles the incoming HTTP / HTTPS requests) is launched.
- Does the file `/.htaccess` exist? If it does, parse it. If any settings in the file are already loaded override the loaded settings with those from the .htaccess file.
- Does the file `/home/.htaccess` exist? If it does, parse it. If any settings in the file are already loaded override the loaded settings with those from the .htaccess file.
- Does the file `/home/example/.htaccess` exist (*this is your main site's .htaccess file*)? If it does, parse it. If any settings in the file are already loaded override the loaded settings with those from the .htaccess file.
- Does the file `/home/example/subdomain/.htaccess` exist (*this is the subdomain's .htaccess file*)? If it does, parse it. If any settings in the file are already loaded override the loaded settings with those from the .htaccess file.

Since the .htaccess file generated by .htaccess Maker in your main site forbids access to directories not explicitly allowed, access to the directories of your other sites under the main site's root is forbidden and you get a 403 Forbidden error.

Depending on your server's configuration this may additionally result in a 404 error. This happens if your server is set up to use custom error pages but these custom error page files either do not exist or they are otherwise not accessible (e.g. they result in a 403 Forbidden error trying to access them). Your main site will try to handle the 404 error which means that you will see a confusing error message from your main site. Likewise, your main site may try to append a language code in the URL and lead to an endless redirection loop. Despite the different error conditions, the problem is the same: the other site is included in a subdirectory of your main site.

There is a workaround which works in most, but NOT all, cases.

You need to know the subdirectory name where your blocked site. We will assume it's `foobar` for the purposes of this documentation.

Go to your **main** site's back-end, Components, Admin Tools for Joomla!, .htaccess Maker. Find the "Allow direct access, including .php files, to these directories" list and enter the name of the directory, e.g. `foobar`, in a new line. Then click on Save and Create .htaccess.

If you have a PHP–powered site in the subdirectory (e.g. Joomla, WordPress, Drupal, Prestashop, a bespoke PHP application, ...) please remember to create a .htaccess file for that application as well. If it's a Joomla or WordPress site using Admin Tools Professional you may use the .htaccess Maker feature to create the .htaccess file.

Unfortunately, this method may not ALWAYS work. It does not reset the full set of options inherited from the main site's web root (and its parent folders). It is only a *partial* reset. We have found that in many cases where an AddHandler / SetHandler directive is used with the main site Apache may get confused trying to handle .php files in subdirectories. In other cases some static files such as CSS, images and JavaScript may not load correctly.

If you still have problems following the workaround method you are advised to follow the correct solution described below, creating folders outside and next to your main site's web root.

Recommendation for additional sites on top of your main site

There are many use cases which require using an additional site on top of your main site. For example, you may want to have a development or staging site; a regional site; a related site which cannot be implemented as a section of your main site; a mini-site for marketing purposes etc.

The first instinct people have is to create a subdirectory to host that additional site. **This is wrong**. Server configuration files such as .htaccess files on Apache and web.config files on Microsoft IIS *cascade* based on the disk directory structure. This means that you additional site will have the .htaccess or web.config file of the main site applied to it.

The correct way to implement an additional site is using a **subdomain** or **add-on domain**. Your hosting control panel will let you select which directory to use as the subdomain's / add-on domain's web root. DO NOT use a folder under your main site since, as we said, the server configuration files cascade. Instead, use a folder *next to* your main site's folder.

For example, if your main site's root folder is `public_html` you must NOT create a subdirectory inside it. Instead, create a folder next to it, e.g. named `addon_html`. Select this folder as your additional site's root. A common convention is to use an abbreviation of your additional site's subdomain / add-on domain name and the suffix _html for naming this directory. For example, if the main site is example.com and we are creating the subdomain staging.example.com to host a staging site we can create a folder named `staging_html` next to the `public_html` folder.

Doing that there is no common path between your main and additional sites. As a result the .htaccess or web.config file of the main site will not be applied to the additional site. You will no longer have a problem.

In most cases a change to the web site root can be applied retroactively, i.e. after you have created a subdomain or add-on domain in your hosting control panel. If you are not sure about that, please ask your host. We can't know which hosting control panel software your host uses and how they have configured it but they most definitely do know that; they are in control of their own servers, after all.

21.9. The administrator secret URL parameter is not working

Your IP is in the Administrator Exclusive Allow IP List or you in the Do not block these IPs field in the Configure WAF page. As per the documentation of Admin Tools, this causes *all* security checks (including the administrator secret key) to be *ignored* for this IP address. Essentially, you have told Admin Tools to not perform any security check AT ALL for these IP addresses. Since the administrator secret URL parameter is a security check, when Admin Tools sees that your IP is in the list of "safe" IP addresses, it doesn't perform the check. As a result, you can access your administrator login page with an invalid or no secret URL key.

Please read the documentation of the component very carefully, especially if the last time you read it was over 3 months ago.

21.10. There are too many security exceptions. Should I be worried?

No, you shouldn't be worried. You are not "under attack" or a "target" of any malicious user. Let Admin Tools do its job. The fact that you see too many security exceptions means that Admin Tools is already handling the situation for you.

So what is going on? What you are experiencing is most likely a high number of automated attacks. Some common types of attacks are the following:

Probes. There are software tools which try to detect whether a site is vulnerable to a number of known attacks in older versions of software. These tools are normally used by security researchers and companies you hire to assess

the security of your site. Sometimes they are also used for nefarious purposes. Just because your site is being scanned for vulnerabilities does not mean it has one, though! Think of it as a locksmith or a burglar testing the security of your door's lock.

Brute force. Another common attack tries to guess the password for a Super User. Typically, the attacker will try using very common username/password combinations such as admin/admin or admin/password and so on.

Blind attacks. Unskilled, wanna-be hackers (commonly called "script kiddies" or "skiddies") will try blindly using some very old attacks they found on the Internet against any site they see in front of them. While this sounds scary, this is rather dumb as the attacks they try are known for years and are, therefore caught very easily. Moreover, they don't even check that they have the right version of Joomla! or even the right CMS. We routinely see attacks on our site targeting the obsolete Joomla! 1.5 (retired in 2011) and WordPress (which we never used on our main site's domain).

In all of these cases Admin Tools does its job well. It will intercept the attack and ban the IP of the attacker if they are repeatedly causing security exceptions. The attacker will eventually give up on your site and simply move on to the next target in their list.

So don't worry too much about it, Admin Tools has your back!

Appendix A. GNU General Public License version 3

Version 3, 29 June 2007

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program—to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

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For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

“This License” refers to version 3 of the GNU General Public License.

“Copyright” also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

“The Program” refers to any copyrightable work licensed under this License. Each licensee is addressed as “you”. “Licensees” and “recipients” may be individuals or organizations.

To “modify” a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a “modified version” of the earlier work or a work “based on” the earlier work.

A “covered work” means either the unmodified Program or a work based on the Program.

To “propagate” a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To “convey” a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays “Appropriate Legal Notices” to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The “source code” for a work means the preferred form of the work for making modifications to it. “Object code” means any non-source form of a work.

A “Standard Interface” means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A “Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The “Corresponding Source” for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

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Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

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4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a. The work must carry prominent notices stating that you modified it, and giving a relevant date.

b. The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to “keep intact all notices”.

c. You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d. If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an “aggregate” if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A “User Product” is either (1) a “consumer product”, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For

a particular product received by a particular user, “normally used” refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

“Installation Information” for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

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If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts, replace the "with… Texts." line with this:

```
with the Invariant Sections being LIST THEIR TITLES, with the Front-Cover Texts
being LIST, and with the Back-Cover Texts being LIST.
```

If you have Invariant Sections without Cover Texts, or some other combination of the three, merge those two alternatives to suit the situation.

If your document contains nontrivial examples of program code, we recommend releasing these examples in parallel under your choice of free software license, such as the GNU General Public License, to permit their use in free software.