# **Fine grained permissions**

There is a general mechanism in place that allows custom **permission policies** to grant or deny any action on any Trac resource, or even specific versions of a resource.

That mechanism is authz\_policy, which is an optional module in tracopt.perm.authz\_policy.\*, so it is installed by default. It can be activated via the *Plugins* panel in the Trac administration module.

## **Permission Policies**

A great diversity of permission policies can be implemented and Trac comes with a few examples.

The active policies are determined by a configuration setting:

- <u>#ReadonlyWikiPolicy</u> controls readonly access to wiki pages.
- DefaultPermissionPolicy checks for the traditional coarse-grained permissions described in <u>TracPermissions</u>.
- LegacyAttachmentPolicy uses the coarse-grained permissions to check permissions on attachments.

Among the optional choices, there is <u>#AuthzPolicy</u>, a very generic permission policy, based on an Authz-style system. See <u>?authz\_policy.py</u> for details.

Another permission policy <u>#AuthzSourcePolicy</u>, uses the <u>?path-based authorization</u> defined by Subversion to enforce permissions on the version control system.

See also <u>?sample-plugins/permissions</u> for more examples.

### **AuthzPolicy**

### Configuration

- Put a <u>?conf</u> file in a secure location on the server, not readable by users other than the webuser. If the file contains non-ASCII characters, the UTF-8 encoding should be used.
- Update your trac.ini:
  - 1. modify the <u>permission policies</u> entry in the [trac] section:
  - 2. add a new [authz\_policy] section and point the authz\_file option to the conf file:
  - 3. enable the plugin through <u>WebAdmin</u> or by editing the [components] section:

### **Usage Notes**

Note the order in which permission policies are specified: policies are implemented in the sequence provided and therefore may override earlier policy specifications.

A policy will return either True, False or None for a given permission check. True is returned if the policy explicitly grants the permission. False is returned if the policy explicitly denies the permission. None is returned if the policy is unable to either grant or deny the permission.

NOTE: Only if the return value is None will the *next* permission policy be consulted. If none of the policies explicitly grants the permission, the final result will be False, i.e. permission denied.

The authzpolicy.conf file is a .ini style configuration file:

• Each section of the config is a glob pattern used to match against a Trac resource descriptor. These descriptors are in the form:

<realm>:<id>@<version>[/<realm>:<id>@<version> ...]

Resources are ordered left to right, from parent to child. If any component is inapplicable, \* is substituted. If the version pattern is not specified explicitly, all versions (@\*) is added implicitly. Example: Match the WikiStart page:

Example: Match the attachment wiki: Wikistart@117/attachment:FOO.JPG@\* on WikiStart:

- Sections are checked against the current Trac resource descriptor **IN ORDER** of appearance in the configuration file. ORDER IS CRITICAL.
- Once a section matches, the current username is matched against the keys (usernames) of the section, IN ORDER.
  - ♦ If a key (username) is prefixed with a @, it is treated as a group.
  - If a value (permission) is prefixed with a !, the permission is denied rather than granted.

**Note:** Other groups which are created by user (e.g. by 'adding subjects to groups' on web interface page Admin / Permissions) cannot be used. See ?#5648 for details about this missing feature.

For example, if the authz\_file contains:

and the default permissions are set like this:

john WIKI\_VIEW jack WIKI\_VIEW # anonymous has no WIKI\_VIEW

Then:

- All versions of <u>WikiStart</u> will be viewable by everybody, including anonymous
- PrivatePage will be viewable only by john
- other pages will be viewable only by john and jack

Groups:

Then:

- everything is blocked (whitelist approach), but
- admins get all TRAC\_ADMIN everywhere and
- devs can view wiki pages.

Some repository examples (Browse Source specific):

Very granular repository access:

Note: In order for Timeline to work/visible for John, we must add CHANGESET\_VIEW to the above permission list.

#### **Missing Features**

Although possible with the DefaultPermissionPolicy handling (see Admin panel), fine-grained permissions still miss those grouping features (see <u>2#9573</u>, <u>2#5648</u>). Patches are partially available, see authz\_policy.2.patch, part of <u>2#6680</u>.

You cannot do the following:

Permission groups are not supported either, so you cannot do the following:

### AuthzSourcePolicy (mod\_authz\_svn-like permission policy)

AuthzSourcePolicy can be used for restricting access to the repository. Granular permission control needs a definition file, which is the one used by Subversion's mod\_authz\_svn. More information about this file format and about its usage in Subversion is available in the <u>?Path-Based Authorization</u> section in the Server Configuration chapter of the svn book.

Example:

- *I* = *Everyone has read access by default*
- /branches/calc/bug-142 = harry has read/write access, sally read only
- /branches/calc/bug-142/secret = harry has no access, sally has read access (inherited as a sub folder *permission*)

### **Trac Configuration**

To activate granular permissions you must specify the authz\_file option in the [svn] section of trac.ini. If this option is set to null or not specified, the permissions will not be used.

If you want to support the use of the [modulename:/some/path] syntax within the authz\_file, add:

where *modulename* refers to the same repository indicated by the <name>.dir entry in the [repositories] section. As an example, if the somemodule.dir entry in the [repositories] section is /srv/active/svn/somemodule, that would yield the following:

where the svn access file, /path/to/svnaccessfile, contains entries such as [somemodule:/some/path].

Note: Usernames inside the Authz file must be the same as those used inside trac.

As of version 0.12, make sure you have *AuthzSourcePolicy* included in the permission\_policies list in trac.ini, otherwise the authz permissions file will be ignored.

#### **Subversion Configuration**

The same access file is typically applied to the corresponding Subversion repository using an Apache directive like this:

svn

For information about how to restrict access to entire projects in a multiple project environment see <u>?wiki:TracMultipleProjectsSVNAccess</u>.

### **ReadonlyWikiPolicy?**

Since 1.1.2, the read-only attribute of wiki pages is enabled and enforced when ReadonlyWikiPolicy is in the list of active permission policies. The default for new Trac installations in 1.1.2 and later is:

[trac]

**Trac Configuration** 

```
permission_policies = ReadonlyWikiPolicy,
DefaultPermissionPolicy,
LegacyAttachmentPolicy
```

When upgrading from earlier versions of Trac, ReadonlyWikiPolicy will be appended to the list of permission\_policies when upgrading the environment, provided that permission\_policies has the default value. If any non-default permission\_polices are active, ReadonlyWikiPolicy will need to be manually added to the list. A message will be echoed to the console when upgrading the environment, indicating if any action needs to be taken.

**ReadonlyWikiPolicy must be listed** *before* **DefaultPermissionPolicy**. The latter returns True to allow modify, delete or rename actions when the user has the respective WIKI\_\* permission, without consideration for the read-only attribute.

The ReadonlyWikiPolicy returns False to deny modify, delete and rename actions on wiki pages when the page has the read-only attribute set and the user does not have WIKI\_ADMIN, regardless of WIKI\_MODIFY, WIKI\_DELETE and WIKI\_RENAME permissions. It returns None for all other cases.

When active, the <u>#AuthzPolicy</u> should therefore come before ReadonlyWikiPolicy, allowing it to grant or deny the actions on individual resources, which is the usual ordering for AuthzPolicy in the permission\_policies list.

```
[trac]
permission_policies = AuthzPolicy,
ReadonlyWikiPolicy,
DefaultPermissionPolicy,
LegacyAttachmentPolicy
```

The placement of <u>#AuthzSourcePolicy</u> relative to ReadonlyWikiPolicy does not matter since they don't perform checks on the same realms.

For all other permission policies, the user will need to decide the proper ordering. Generally, if the permission policy should be capable of overriding the check performed by <code>ReadonlyWikiPolicy</code>, it should come before <code>ReadonlyWikiPolicy</code> in the list. If the <code>ReadonlyWikiPolicy</code> should override the check performed by another permission policy, as is the case for <code>DefaultPermissionPolicy</code>, then <code>ReadonlyWikiPolicy</code> should come first.

## **Debugging permissions**

In trac.ini set:

Display the trac.log to understand what checks are being performed:

tail -n -f log/trac.log egrep

See the sourced documentation of the plugin for more info.

See also: <u>TracPermissions</u>, <u>?TracHacks:FineGrainedPageAuthzEditorPlugin</u> for a simple editor plugin.