

## Redmine - Feature #24520

### Use more secure hashing algorithm

2016-12-02 14:27 - mohammad hasbini

|                        |                           |                        |           |
|------------------------|---------------------------|------------------------|-----------|
| <b>Status:</b>         | New                       | <b>Start date:</b>     |           |
| <b>Priority:</b>       | Normal                    | <b>Due date:</b>       |           |
| <b>Assignee:</b>       |                           | <b>% Done:</b>         | 0%        |
| <b>Category:</b>       | Accounts / authentication | <b>Estimated time:</b> | 0.00 hour |
| <b>Target version:</b> |                           |                        |           |
| <b>Resolution:</b>     |                           |                        |           |

#### Description

### Introduction

Currently the hashing algorithm used is: SHA1 [0].

I suggest to use a more secure ( computationally expensive ) algorithm to store the password. Some alternative algorithms to use:

- bcrypt with reasonable iteration count.
- scrypt.

### Drawbacks

The only drawback I can think of is the migration of the database to use the new algorithm. I'm thinking about using this approach to fix this issue:

Let's call the new secure hashing algorithm: H.

- The salt will be kept in the database.
- Foreach user in the database, **replace** the hashed password: SHA1(\$salt.\$plain\_password) with H(SHA1(\$salt.\$plain\_password)).
- The algorithm H(SHA1(\$salt.\$plain\_password)) will be used from now when creating a new users/resetting a new password ...

### Why is SHA1 insecure ?

When I say *insecure* I'm not talking about the collision ratio. I'm referencing that it's easy (fast) to compute.

Example: Using hashcat<sup>1</sup> v3.10 with GPU: `R9 290X (+10Mhz) - AMDGPU-pro 16.40` [2], It's able to compute:

- 4,102,360,845 sha1 hash per second.
- 94,960 scrypt hash per second.
- 12,070 bcrypt hash per second ( cost of 10 iirc ).

Thoughts ?

[0] <https://github.com/redmine/redmine/blob/master/app/models/user.rb#L840>

[1] <https://hashcat.net/>

[2] [https://docs.google.com/spreadsheets/d/1B1S\\_t1Z0KsqByH3pNkYUM-RCFMu860nlfSsYEqOoqco/edit#gid=1591672380](https://docs.google.com/spreadsheets/d/1B1S_t1Z0KsqByH3pNkYUM-RCFMu860nlfSsYEqOoqco/edit#gid=1591672380)

#### Related issues:

Related to Redmine - Feature #36056: Update password hash function

**New**

#### History

#1 - 2022-02-22 16:38 - Vincent Robert

- Related to Feature #36056: Update password hash function added