

# osu!Gatari clan system

firedigger

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## Abstract

This paper is an extensive explanation of osu!Gatari clan system - the newest feature of a CIS (russian) private server. The motivation is described and formal definitions and their explanation for the clan points formula are given.

## 1 Introduction

At first clan system was announced for osu!lazer more than a year ago and many people were hyped about it. Since lazer is taking a long time and we have our own server, we decided to establish a clan system of our own on gatari.

### 1.1 Gatari

Gatari is a private server created on a basis of ripple source, owned by belarussian ex-cheats developer xxdstem and active Russian witchhunter and author of this paper firedigger. Main motivations for the server were a protest against osu!support misdoings (banning legit players and not banning cheaters) and a need of Russian-speaking osu!environment. The server website is `osu.gatari.pw` and a more extensive introduction post (including how to join) can be found at [https://vk.com/wall-139469474\\_3475](https://vk.com/wall-139469474_3475)

### 1.2 Clan system

The main motivation for a clan system is a team-based way to engage into osu. Besides being technically a single-player, osu! is all about the community and your friends - competing on maps and discussing latest events of the game.

The clan system for the first time in history of rhythm games besides team-based tournaments allow you to unite with your friends and compete with other players as a team. The clan system is also aimed at recalling old memories from MMO, for example, in having "map siege" mechanic, which is about "raiding" a map together with other clan members. Gatari clan system press release is available at [https://vk.com/wall-139469474\\_5677](https://vk.com/wall-139469474_5677)

## 2 Creating and maintaining a clan

### 2.1 Creating a clan

Clan creation is available from the user context menu or direct link at <http://osu.gatari.pw/p/42>. This operation requires druzhban status. The clan will continue to exist after the druzhban expires and all other operations do not require donor status if not stated otherwise

Each clan receives a unique ID which can be used to target a clan page using a direct link like <http://osu.gatari.pw/p/3> for clan 3.

A clan has a title, 3-letter abbreviation which is added to clan members usernames in square braces on website, and a customizable userpage and avatar, just like a user profile. The page also contains some stats, clan badges, member list with listed clan points contributed by each individual player.

A clan can have 10 members at max.

### 2.2 Joining a clan

Players can apply to a clan by clicking *Join clan* button on the clan page. Each player can be at one clan at max at any given time. Consequently, a player can not have several pending applications to clans.

### 2.3 Changing the clan

Members of the clan can leave the clan on the clan page. To prevent system abuse there is a cooldown on joining another clan after leaving one - 3 days.

### 2.4 Managing a clan

Through edit clan page the clan leader can edit clan userpage, avatar, request clan name change and also accept or reject clan applications and kick members.

## 3 Gatari clan points

### 3.1 Introduction

To make clans in osu actually competitive, a separate leaderboard for the clans has been developed. The ranking is based on a completely new metric called "clan points" with a complex formula consisting of both personal and group measurable gameplay achievements.

The explanation for the variables of the formula are given in the next section.

## 4 Variables of the clan points formula

The formula is basically a sum of all the individually calculated components. Each of the components is going to be explained in this section and the next section has the formal definitions of the formula.

### 4.1 Top pp play

The top pp play with a quadratic multiplier is included in a player's clan points. This is a simple representation of one of the strongest score a player can do in the game, so this value allows strong players to get a really quick initial boost without being too committed to the whole system. Being the only value of that type, top pp play becomes less relevant with players committing to earning clan points by other methods.

Because of the quadratic multiplier trying harding a single really high pp score is beneficial for the clan member.

### 4.2 Peak rank

A peak rank is the highest(lowest numerically) rank that you have ever got on individual leaderboards. This criterion should motivate players to not only set good scores, but actually compete with others in a single run to try to aim at the highest rank possible. This kind of mechanic has never been implemented in osu! before, still some players prefer to state their peak rank on their userpage. The motivation should also be amplified by the sense of achievement of having a bonus that, once achieved, will never be reduced, same as top pp play but this actually rewards commitment to playing actively on the server and aiming for many good scores.

### 4.3 First places

First places are one of the values that should allow players to fully engage into continuous unending clan points farm. It is not event-based and it doesn't require actual skill improvement from the player but requires dedication and some skill.

Only the first place on a map based on pp gives clan points bonus. The fact that the score sorting is done by pp means that DT chokes and just DT-only low acc FCs are able to outscore HDHR scores for example.

Top 1 places points are also increased based on the star rating of the map and mod of the play. The function is polynomial, somewhere at 8 stars is the point when a player starts gaining real points per each map. This is done in order to motivate better players to compete on "harder" maps and average players can still compete on lower star maps that most people would not care about. Standard game mods like HR and DT which affect star rating are accounted in the recalculated star rating. Other mods which make the map

more difficult but do not affect star rating like FL and HD give a static multiplier bonus. To have the top FL score by pp is god-tier, so the bonus is counted as if the star rating was 3 time higher than normal.

After applying star rating bonuses and calculating basic points they are multiplied based on the length of the map. Longer maps give more points to account for substantially higher playtime required to fight for them. A marathon map of 50 mins length gives 30 as many points.

This bonuses allow unconventional pros like FL and marathon players to benefit from their insane abilities.

#### **4.4 Badges**

Badges are not only medals to be shown on the clan page but also permanent bonuses to clan points awarded for specific clan events. Things like clan tournaments and occasional charts will grant these. It could also include some fun team-based achievements in the future. Some fun badges do not actually give any points.

#### **4.5 Ranked score**

A small bonus for total clan members' ranked score is given to the clan to give a slight advantage to highly invested players.

### **5 Map siege**

Map siege is a continuous event where clan members are compete together on a single rotating map. Only clans with at least 5 members are allowed to participate.

#### **5.1 Map siege points**

Clan points on the map siege event for particular map are calculated as average pp on the map by all players including the ones who do not have a score. This is done in order to obligate all the players to participate in order for the clan to be successful. The map siege is also a short-timed event (around 3 days) so the players are nearly always engaged in a clan-related activity.

#### **5.2 Map siege rewards**

At the end of the map siege timer the teams gets points depending on their final rank on the clan leaderboard of the map (according to the average pp). The bonus reduces

exponentially as the rank gets lower so aiming for high positions is crucial. Moreover, getting top 1 on map siege grants a one-time badge worth 2000 points to motivate a clan to unite the forces and play at their best at least once with a purpose in mind.

Additionally, to keep the max. bonus restricted and make map siege time-relevant, all previous map siege points are reduced by 20% each new instance. This way the infinite sum actually converges and has a limit and a team that wins every single map siege will still be capped at a certain amount of earned points. If a team decides to stop playing map siege, it will eventually lose any gained points.

## 6 Formal definition

### 6.1 Top pp play

p - points

top - top pp play

$$p = \frac{top^2}{400} \quad (1)$$

### 6.2 Peak rank

On rank change:

$$peak\_rank = \max\{previous\_rank, new\_rank\} \quad (2)$$

p - points

pr - peak rank

$$p(pr) = \begin{cases} \frac{1000}{\sqrt{pr}} & pr \leq 10 \\ \frac{3160}{pr} & 10 < pr < 100 \\ 0 & pr \geq 5000 \\ \frac{5000^2 - pr^2}{500^2} & otherwise \end{cases}$$

### 6.3 First places

lp - length bonus multiplier

l - length of the map in seconds

$$lp(l) = \begin{cases} 1 & l \leq 320 \\ 1 + \frac{29(l-320)}{1800-320} & 320 < l < 30 \times 60 \\ 30 & l \geq 30 \times 60 \end{cases}$$

p - points  
s - star rating  
If map was played with HD  $s = s \times 1.032$   
If map was played with FL  $s = s \times 3$

$$p = lp \times \frac{s^{4.45}}{800} \quad (3)$$

## 6.4 Clan siege

p - points  
r - clan rank in the leaderboard

$$p = 0.6^{r-1} \quad (4)$$

After each clan siege all the previously earned points are multiplied by 0.8

## 6.5 Ranked score bonus

p - points  
s - total clan ranked score

$$p = \sqrt[3.6]{s} \quad (5)$$

# 7 Plans for future research

## 7.1 Clan wars

Our clan system is still missing one of the aspects of clans from MMO - clan wars. The mechanics for seasonal clan-based tournaments and points is yet to be designed.