

asss User's Guide

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1 Introduction

asss is a new server for Subspace/Continuum. It was written from scratch by Grelminar (grelminar@yahoo.com), with help from several other people (see the Acknowledgements section). The name asss stands for “a small subspace server.”

Although care has been taken to remain compatible with the original Subspace server, known as subgame, players, and especially staff and admins, should be aware that asss is a different piece of software. It has many features that subgame is missing, but it is also missing some from subgame. The features that are common to both may work different. They will have different bugs. In short, don't expect everything to work the same as in subgame, because it won't.

1.1 Platform and Requirements

asss was developed primarily on a Linux system on the Intel x86 platform. Although some effort has been spent making it run on Windows also, people running it on non-Linux systems should not expect everything to work perfectly: there may be missing features and it may run slower.

The requirements for running asss on Linux are pretty minimal: The system should have the pthreads library (any recent Linux system should), Berkeley DB 4.0 or greater (older versions won't work), and zlib. It also has optional mysql support, currently used only for the built-in alias database. To compile asss from source (on either Linux or Windows), the include files for those libraries must be installed, as well as a C compiler. If you've obtained the source from CVS, you'll also need the Python interpreter in order to generate certain files. If you're using a tarball instead, it will come with those files present already.

If you're missing mysql, you'll have to edit the Makefile by hand and remove `database.so` from the list of libraries to build.

If you're missing Berkeley DB, you can still build asss, but it'll be missing all support for scores and any other persistent information. You'll have to remove `scoring.so` and `dbtool` from the list of binaries to build.

Currently, only 32-bit Intel platforms are supported because of byte-order issues. Eventually, asss will be able to run on other architectures, but for now, Intel will have to do.

2 File Layout

The server always access files relative to the directory it was started from, which must have certain files and directories in certain places. That means that to run multiple copies of the server on one machine, you should make sure that each one is started from its own home directory.

Here's what a typical machine's file layout should look like:

```
/home/asss
+ bin
| + asss
| + dbtool
| + core.so
| + commands.so
| + flags.so
| + balls.so
| + ...
|
+ zone1
| + news.txt
| + bin (symlinked to ../bin)
| + defaultarena
| | + arena.conf
| |
| + arenas
| | + duel
| | | + arena.conf
| | |
| | + pb
| |   + arena.conf
| |   + balls.conf
| |   + pb.lvl
| |
| + conf
| | + global.conf
| | + modules.conf
| | + groupdef.conf
| | + groupdef.dir
| | | + default
| | | + mod
| | | + smod
| | | + sysop
| | |
| | + defs.h
| | + svcs
| |   + svcs.conf
```

```

| | + prizeweights
| | + misc
| | + ship-warbird
| | + ...
| |
| + log
| | + asss.log
| | + asss.log.1
| |
| + maps
| | + zone1-pub.lvl
| | + another.lvl
| |
| + data
|   + data.db
|
+ zone2
  + bin (symlinked to ../bin)
  + ...

```

The most important directory is **bin**. This directory should contain the main **asss** binary, as well as all files containing modules to be loaded by the main binary. To ease administration, it is not recommended that each zone on a machine have a full copy of the **bin** directory. Instead, **bin** should be a symlink to a shared directory containing binaries.

conf contains config files that affect the server as a whole. Among the important files are **modules.conf**, which specifies the list of modules to load at startup, **global.conf**, which contains config settings for the whole server, **groupdef.conf**, which describes which capabilities belong to each group, and **staff.conf**, which assigns groups to various players. **groupdef.conf** uses files in the **groupdef.dir** subdirectory to ensure more powerful groups have all the capabilities of lesser ones.

Also in **conf** is **defs.h**, which includes a bunch of other config files that are typically symlinks to files in the source code directory. This is done to ensure the server and config files agree on numerical values for various constants. All **.conf** files automatically **#include defs.h**.

conf can also contain partial config files for arenas to include. The default directory structure contains an **svs** directory, with the Standard VIE Settings, split into multiple files, by ship and function.

log will be used by the server to deposit any log files that it creates.

data is used to keep the database holding all persistent information, including scores. Information for all arenas is kept in the same database file.

maps is an optional directory that the server will search for **.lvl** files in. These files can also be located in arena directories, so this isn't a required directory. It might simplify administration, though, to keep all map files in this directory.

Each arena gets its own directory for storing settings related to that arena, as well as maps and **.lvz** files.

The default arena (also called the public arena) keeps its data in the directory **defaultarena**,

relative to the base directory for the zone. All other arenas keep their files in `arenas/foo`, where `foo` is the name of the arena.

Each arena directory must contain a file named `arena.conf`, which contains the settings for that arena. For ease of administration, this file may `#include` other config files in either the same directory, or the global `conf` directory.

The file `news.txt` should be located in the base of the zone directory as well, unless another location is specified in `global.conf`.

2.1 Running ass

2.1.1 Command line arguments

There are currently three things you can give ass on the command line:

- A file name on the command line will be interpreted as the name of a directory containing the zone files (as described in the last section). If no directory is specified, the current directory will be used.
- The optional switch `--daemonize` (abbreviated `-d`) tells it to fork into the background before starting up. You might want to use this when running ass from a startup script.
- Another switch, `--chroot` (abbreviated `-c`), tells it to attempt to chroot to the zone directory before starting up. See the next section for more information on this.

2.1.2 Running in a chroot jail

If you want to increase the security of your host a bit, you can run ass in a chroot jail. This means that it will run with its root directory set to the zone directory, and it won't be able to access any files outside of that directory.

You need to do a bit of preparatory work before chroot can work. You'll need to make a `lib` directory in the zone directory containing all the shared libraries needed by any modules you'll be loading. On my machine, I needed to put the following files from `/lib` and `/usr/lib` in there: `ld-linux.so.2`, `libc.so.6`, `libpthread.so.0`, `libz.so.1`, `libm.so.6`, and `libdb-4.0.so`. You'll also have to make sure that nothing within the zone directory is a symlink pointing outside of the zone directory. So you'll need a separate copy of the `bin` directory and shared settings files for each separate zone. It's also a good idea (although not strictly necessary) to create an `etc` directory with limited `passwd` and `group` files, and also things like `ld.so.conf`, `hosts`, and `nsswitch.conf`.

In order to do a chroot, ass needs to be run as root. It won't continue running as root, of course: as soon as it successfully chroots, it drops its privileges and runs as a normal user. The user it runs as depends how it was run: if the ass binary is installed setuid-root, it will always drop to the user who invoked the binary. If it's actually run by the root user, it will use the contents of the `USER` environment variable to control which user to drop to. So to run it as user "nobody" from a script running as root (like `rc.local`), you can run something like `env USER=nobody /path/to/ass /zone/dir --chroot --daemonize`.

3 Modules

Almost all of the functionality of assf is split into many small modules. The modules are in separate libraries with the extension `.so` (on Unix) or `.dll` (on Windows). One shared library can contain any number of modules.

There are currently 66 modules that are part of assf, but each zone might have some custom-developed modules for their zone as well.

When the server starts up, it loads all of the modules listed in the file `modules.conf`. Once it's running, more modules can be loaded with the `?insmod` command, and modules can be unloaded with `?rmmod`. The current list of loaded modules can be examined with `?lsmmod`.

The `modules.conf` file has a special format that's slightly different from the rest of the config files. It has no sections. Each line should contain a "module specifier." A module specifier is just something of the form `filename:module`. The filename part should be the name of the file containing the module, without the extension. The module part should be a module name that's contained in the file. The colon separating them is just a colon. Comments are indicated by an initial semicolon or pound sign.

If a particular zone has no need for a particular module (e.g., Chaos zone doesn't have any flags or balls, so it doesn't need those modules), it shouldn't load those modules. Only loading the modules that are actually used for a zone will decrease the memory usage of the server, and make it run faster.

Once a module is loaded into the server, it has full access to the server's data, including player IP addresses, machine id's, scores, and passwords. It can also access files on the machine it is running on, and make network connections, and it can easily crash or deadlock the server. Thus, admins and sysops should be careful to only load modules from sources that they trust.

In the future, it will be possible for some modules to run in separate processes or even separate machines, it will be possible to write modules in languages besides C, and it will be possible to limit the information that modules have access to.

4 Capabilities

The old Subspace server supported a very limited notion of authority: There were moderators, super moderators, and sysops. Each level allowed access to more and more commands. Additionally, moderators and above could see private freqs and private arenas, and bypass freq and arena size limits.

assf is much more flexible. It lets sysops and admins assign any set of powers to any group of people. In the assf model, each of the above powers, plus a few more, like energy viewing, is assigned a capability name. Each command also gets a capability name (actually, each command gets two, one for using the command with public messages, and one for using it with private messages). Whenever the server needs to determine if a player can take a certain action, it asks the capability manager, which replies either yes or no.

The server comes with one capability manager, contained in the `capman` module, but there's no reason why another one couldn't be used if your zone has peculiar needs for assigning people powers.

4.1 Capability names

The most common capability names are for commands. If a player tries to run a command, say, `?lastlog`, the server would query the capability manager with the name `cmd_lastlog`. If a player uses a command as a private message, as in `:annoying_player:?freqkick`, the capability name used would instead be `privcmd_freqkick`.

There are several other capabilities that are currently used in the server:

- `seeprivarena` controls whether private arena names are sent to a player for the `?arena` command.
- `seeprivfreq` determines if a player sees private freqs in the freq listing.
- `findinprivs` is needed by a player running `?find` for the server to report the names of private arenas. (Not implemented yet.)
- `seepd` allows players to see other ship's energy and specials from spectator mode. ("epd" stands for extra position data.)
- `seesysoplogall` allows a player to see all important log messages in the zone.
- `seesysoplogarena` only allows a player to see only important log messages having to do with the arena he is currently in.
- `seemodchat` allows players to see the moderator chat.
- `sendmodchat` controls who can send moderator chat messages. Usually, these two capabilities would be given to the same people.
- `uploadfile` allows a player to upload files. Note that the player must also have the `cmd_putfile` to upload a file using that command.
- `bypasslock` allows players to switch ships even though the arena or themselves have been locked into a ship or into spectator mode by a staff member.

4.2 The default capability manager

The default capability manager works with groups. Each group has a set of capabilities, and players are assigned to groups. To check if a player has a certain capability, the capability manager simply checks if the group he's in has that capability.

To determine which groups have which capabilities, the `groupdef.conf` file is used. It should have a section for each group, and a line within that section for each capability.

To determine which players belong to which groups, the `staff.conf` file is used. It should have a single section, called "Staff," with player names as keys and group names as values. Players not listed in the staff file will be assigned to the group "default." If a player is assigned a group in `staff.conf`, he will be in that group in any arena he enters.

Sometimes, however, a sysop will want to give certain players powers in only certain arenas. Each arena's config file can also contain a "Staff" section. Groups assigned through arena config files will only be valid in that one arena. Additionally, the global

`staff.conf` can be used to give a player powers in only certain arenas by using a value like “arena1:agroup arena2:othergroup.”

The command `?setgroup` can be used to control group assignment.

The default capability manager also supports passwords for groups, although using this feature is strongly discouraged. It is intended for sysops or other staff members to gain privileged access when the zone isn’t connected to a billing server to provide authentication. But there’s a better way to do this: if you load the `auth_file` module before `billing`, the server will fall back to using `auth_file` when the billing server is not connected. Staff members can set passwords using the `?passwd` command (specific to `auth_file`), and they will have access to their usual group.

4.2.1 Emulating the old system

Using the default manager, it’s relatively easy to set up ass to emulate the old server’s moderator, super moderator, and sysop model: The `groupdef.conf` file looks like this:

```
; conf/groupdef.conf

[default]
#include groupdef.dir/default

[mod]
#include groupdef.dir/default
#include groupdef.dir/mod

[smod]
#include groupdef.dir/default
#include groupdef.dir/mod
#include groupdef.dir/smod

[sysop]
#include groupdef.dir/default
#include groupdef.dir/mod
#include groupdef.dir/smod
#include groupdef.dir/sysop
```

The files in `groupdef.dir` contain simply lists of capabilities. Each group includes the file for itself, as well as the files for the lesser powerful groups.

5 Logging

ass has extensive logging capabilities. Any remotely interesting event in the game will generate a log message, which will be passed to any number of loaded logging handlers.

5.1 Levels

There are five importance levels defined for log messages: `DRIVEL` is unimportant information that you probably don't want to see, but is logged anyway, just in case. `INFO` is basic information about common, unexceptional events. `MALICIOUS` is for exceptional conditions that are caused by players sending bad data to the server. These might be indications of cheating or other illicit activity. They also might be caused by abnormal network conditions. `WARN` is for error conditions that can be worked around, or aren't too catastrophic. `ERROR` is for really really horrible error conditions. These usually indicate misconfigured servers or bugs in the server itself.

5.2 What is logged?

There are currently 283 distinct log messages in the server. By type, there are 28 `ERROR` messages, 74 `WARN` messages, 68 `MALICIOUS` messages, 47 `INFO` messages, and 66 `DRIVEL` messages.

5.3 Filtering

Log handlers support a common method of filtering that give you lots of control over which handlers see which messages.

By default, all messages are seen by all handlers. To limit messages to a handler `log_foo`, create a section with the same name as the handler in `global.conf`. The keys in that section will be module names, and the values will be a set of priority levels to allow, specified by listing the first letters of the allowed levels. The special key `all` will be used for modules not listed. For example:

```
; this keeps flag positions and ball fires from appearing in the log
; file, but allows other DRIVEL messages.
[log_file]
all = DIMWE
flags = IMWE
balls = IMWE

; this allows all messages to go to the console except those from
; cmdman.
[log_console]
all = DIMWE
cmdman = none

; this lets only important messages (malicious and error) go to sysops
[log_sysop]
all = ME
```


5.4 Commands

In general, all commands run by anyone are logged, at level INFO, along with their parameters and targets. Some commands, however, contain personal or sensitive information that might be abused by zone staff who can view logs. To prevent this abuse, there is a hardcoded list of commands whose parameters don't get logged (they get replaced by ... in the log messages).

5.5 Handlers

The current log handlers are:

- **log_console** simply writes all log messages to standard out, which is usually the terminal that ass is started from. Usually, ass will run detached from any terminal, so this is primarily intended for debugging.
- **log_file** write all log messages to a file. The name of the file is controlled by the **Log:LogFile** configuration option. The command **?admlogfile** may be used to flush or reopen the log file while the server is running. ass always appends to a single file. If log rotation is desired, it should be accomplished with an external program such as **logrotate**.
- **log_sysop** informs players of log events within the game. "Important" messages, as defined by the logging filter, are sent to players with the capabilities **seesysoplogall** and **seesysoplogarena**. Players with the latter capability only see log messages that originated in the arena. This logging module also implements the **?lastlog** command.

6 New Features

6.1 Freq Ownership

Requires module: freqowners

If the arena controller allows it, private freqs can now be owned. The first player to move to a particular private freq becomes an owner for that freq. An owner can kick non-owners off of his freq by sending them the command **?freqkick**. An owner can give owner privileges to other players by sending them the command **?giveowner**. The spec freq can't be owned.

The config variable **Team:AllowFreqOwners** controls whether to enable freq ownership. It defaults to on.

6.2 Arena limiting

Requires module: arenaperm

Any arena can specify a **General:NeedCap** value in its config file. If present, players will not be allowed to enter the arena unless they have the specified capability.

6.3 Autowarping

Requires module: `autowarp`

Using the region system, certain areas of the map can be configured to warp a player who enters them to somewhere else on the map.

FIXME: include details about specifying autowarp settings.

6.4 Moderator chat

asss includes an actual moderator chat system, which should be an improvement over the `?cheater`-based systems in use currently.

Mod chat messages begin with a backslash (\), and are displayed in dark red (the same color as sysop warning messages). Who is allowed to send and receive mod chat is controlled by two capabilities: `seemodchat` and `sendmodchat`, which do what they sound like.

6.5 Multiple commands

You can specify multiple commands on one line by dividing them with vertical bars (|). The subsequent commands (after the first bar) don't need question marks (although they are ignored if present). You can send multiple private commands, but you can't send both public and private commands on the same line.

6.6 Built-in alias database

Requires module: `mysql`, `aliasdb`

asss includes a hastily-written alias database. The alias database depends on mysql support, although it's written so that it should be easy to port to another relational database if necessary.

All logins are automatically entered if the `aliasdb` module is loaded. There are several ways to query the database: `?qalias` isn't written yet, but it will be the most useful interface when it's done. `?qip` allows you to query by IP address range. `?rawquery` allows you to make custom queries with most SQL commands. You can find the documentation for these commands in the Commands section.

The `?last` command uses the alias database to find the last 10 people to log in.

6.7 Authentication

Ok, so this isn't new, but it's greatly expanded in functionality: authentication can now be done with things other than billing servers, and some authentication modules can be "stacked."

For example, one useful auth module is `auth_file`, which uses a file of hashed passwords to authenticate users. This module is intended for use by private servers who want to allow a small group of people (say, a squad) to play together, and not allow anyone else in. It can also be used as a fallback module by the `billing` module (which acts as an auth module, among other things). This means if the billing server is connected, login

requests will be authenticated against the billing server, but if it isn't, they get passed to `auth_file`.

If the user is listed in the file and supplies a correct password, he will be allowed access and be granted groups. If not, he will be either accepted or rejected depending on the value of `General:AllowUnknown` setting in `passwd.conf`. If an unknown player is allowed, he will *not* be assigned groups based on name. (That will also not happen if no auth modules are loaded.)

The `auth_file` module also allows you to lock a specific player name out of a zone.

To use a fallback module for the `billing` module, simply make sure that that module is loaded before `billing` is loaded.

6.8 Multiple “public” arenas

asss supports a general player placement interface to decide which arena a player should be placed in upon entering the zone. The most useful arena placing interface is `ap_multipub`, which has the effect of creating multiple “public” arenas.

To use `ap_multipub`, simply make sure it's loaded from `modules.conf` (somewhere near the end is good). It is controlled by two settings in the global config file: `General:PublicArenas` is a whitespace-separated list of public arena *types* (not names). For example, if `General:PublicArenas` is set to “pb turf wz,” the server will start placing people in the arena named “pb1,” then when that gets full, it will move to “turf1,” then “wz1,” then “pb2,” etc. To control how many people it will put in each arena, use `General:DesiredPlaying`, which is a count of *playing* players (i.e., not spectators).

6.9 Bandwidth Throttling

asss supports bandwidth throttling for players on slower connections. To make the game fairer, packets are prioritized depending on their function. For example, weapons packets will be preferred over chat messages when deciding how to use up the last few bytes of allotted bandwidth. The server will also reserve a certain percentage of the total bandwidth for packets of certain priorities. Techniques similar to those used in modern TCP implementations are used to dynamically adjust the bandwidth limit to players based on their connection quality.

7 Lag Control

7.1 Lag Measurement

Lag, which includes both latency and packetloss, is difficult to measure accurately and control. asss does as well as it can with limited information.

There are several ways that the server collects latency information: Position packets sent from the client contain timestamps that the server can compare to its own current time to determine approximately how long the packet took to get there. This is complicated by the fact that the times on the server and client aren't always perfectly synchronized. Reliable packets need to be acknowledged, and the round-trip time between the sending of a reliable packet and the receipt of its acknowledgement can be measured. That will

be equal to approximately twice the one-way latency, but that isn't exact either because the two trips might take different amounts of time. Finally, the client can measure latency using the same techniques, and periodically send its results to the server for processing.

Packetloss is slightly easier: the client and server can keep track of how many packets each has sent and received, and compare numbers periodically. Reliable packets also provide opportunities to measure packetloss: if a reliable packet isn't acknowledged within the timeout, the server knows either the original packet or the acknowledgement got lost. If a reliable packet is received twice, the server knows the acknowledgement got lost. Again, the client can also measure these numbers and send the results to the server.

7.2 Settings and Actions

There is one global setting for lag, `Lag:CheckInterval` which controls how often each player's lag numbers are checked to perform actions. It's specified in ticks. Each arena can specify its own lag limits. All of the parameters described below go in the `Lag` section in the arena's configuration file (or a file included from it).

There are four main values that lag actions are based on: average ping (determined by an exponential averaging scheme, based on S2C, C2S, and reliable pings), S2C packet loss, S2C weapons packet loss, and C2S packet loss. Each value has four thresholds associated with it: one controls when a player gets forced into spectator mode, one controls when a player is allowed to pick up flags and balls, and two control weapons ignoring. The units of the settings concerning latency are milliseconds, and the units of the settings concerning packetloss are tenths of a percent (i.e., fractions out of 1000).

Forcing into spec is easy enough: if the value is over the threshold when a player is examined, he's forced into spec. Disabling flags and balls also works on a simple threshold: if the value is above it, the player won't be allowed to pick up any flags or balls. If he's currently carrying a flag or ball, and one of the values moves over the limit, he'll get to keep it.

Weapon ignoring is slightly more complicated: There are two thresholds, one to start ignoring weapons, and one where all weapons will be ignored. If all of the values are below their respective starting thresholds, none of the player's weapons will be ignored. If one of them is higher, a percent of incoming weapons from that player to be ignored is calculated by interpolation between the starting threshold (0%) and the higher threshold (100%). If multiple values are above their starting threshold, the percent of weapons that gets ignored is the maximum of the percent ignored from each value. C2S packetloss doesn't cause weapon ignoring, since C2S packetloss generally gives the player a disadvantage, not an advantage.

The names of these settings are: `PingToSpec`, `PingToStartIgnoringWeapons`, `PingToIgnoreAllWeapons`, `PingToDisallowFlags`, `S2CLossToSpec`, `S2CLossToStartIgnoringWeapons`, `S2CLossToIgnoreAllWeapons`, `S2CLossToDisallowFlags`, `WeaponLossToSpec`, `WeaponLossToStartIgnoringWeapons`, `WeaponLossToIgnoreAllWeapons`, `WeaponLossToDisallowFlags`, `C2SLossToSpec`, and `C2SLossToDisallowFlags`. Their functions should be clear from their names and the above description.

One final setting `SpikeToSpec`, determines the length of time that the server can receive no packets from a player before forcing him into spectator mode.

8 Virtual Servers

asss allows one server process to appear to clients as several different servers. The primary advantage of this feature is that players connecting to all virtual servers are treated the same internally and can move between arenas and communicate as if they connected to the same server.

To create virtual servers, you have to tell the `net` module to listen on more than one port. You do this by creating additional settings in the “Net” section of `global.conf` named “Listen1,” “Listen2,” etc. Each setting must specify a port, and can also optionally specify a virtual server identifier, and a specific IP address to bind to.

Virtual server identifiers are used in several ways: if you are using an arena placing module that supports them (e.g., `ap_multipub`), the server id will be used as the arena basename to place players who connect through that port in.

The `directory` module also supports virtual servers: it will create one directory entry for each virtual server. The server name and description can be different for each virtual server. To specify them, create “Name” and “Description” settings in the section “Directory-*servername*” for each virtual server identifier. If either of those settings is missing from that section, it will fall back to their values in the “Directory” section.

Finally, an example to make this all clear:

```
;; global.conf

[Net]
;; listen on 3 different ports:
; players connecting to port 2000 will be send to a random arena.
; players who connect to 5000 will be sent to pb1, pb2, etc. port 7500
; will send them to aswz by default, and so on.
Listen1 = 2000
Listen2 = 5000:pb
Listen3 = 7500:aswz
; just as an example, this will force the server to listen on an
; internal interface only, and send those players to a secret arena:
Listen4 = 192.168.0.23:3300:#secret

[Directory]
;; point to the directory servers you want to be listed on. using
;; default port and password.
Server1 = sscentral.one.com
Server2 = sscentral.two.com

;; now describe what this server is called by default:
Name = A Testing Zone
Description = Testing happens here.

[Directory-pb]
;; specify the name and description for pb:
```

```
Name = PowerBall
Description = Play with balls!
```

```
[Directory-aswz]
;; specify only name for aswz:
Name = A Small WarZone
```

9 Command Reference

These are all of the commands that the server currently recognizes. Not all of them will always be available. If a command requires a module that's not one of the core modules, that will be indicated above its description. Most other commands require the `playercmd` module.

Possible targets are listed for each command. The targets can be “none,” which refers to commands typed as public (arena) messages, “player,” for commands that can target specific players, “freq,” for commands that can target a whole freq at a time (with either ' or "), or some restriction of one of those.

Each command also describes any required or optional arguments.

Note that the section doesn't list who is allowed to run a particular command, because that is determined by the capability manager, which can be fully customized for each particular server.

a

Possible targets: player, freq, or arena

Arguments: <text>

Displays the text as an arena (green) message to the targets.

aa

Possible targets: player, freq, or arena

Arguments: <text>

Displays the text as an anonymous arena message to the targets.

admlogfile

Possible targets: none

Arguments: `flush` or `reopen`

Administers the log file that the server keeps. There are two possible subcommands: `flush` flushes the log file to disk (in preparation for copying it, for example), and `reopen` tells the server to close and re-open the log file (to rotate the log while the server is running).

arena

Possible targets: none

Arguments: `[all]`

Lists the available arenas. Specifying **all** will also include empty arenas that the server knows about.

ballcount

Possible targets: none

Arguments: <number of balls to add or remove>

Increases or decreases the number of balls in the arena. Takes an argument that is a positive or negative number, which is the number of balls to add (or, if negative, to remove).

billingadm

Possible targets: none

Arguments: status—drop—connect

The subcommand 'status' reports the status of the billing server connection. 'drop' disconnects the connection if it's up, and 'connect' reconnects after dropping or failed login.

billingid

Possible targets: player or none

Arguments: none

Displays the billing server id of the target player, or yours if no target.

botfeature

Possible targets: none

Arguments: [+/-seeallposn]

Enables or disables bot-specific features. **seeallposn** controls whether the bot gets to see all position packets.

cheater

Possible targets: none

Arguments: <message>

Sends the message to all online staff members.

disablecmdgroup

Possible targets: none

Arguments: <command group>

Disables all the commands in the specified command group and releases the modules that they require. This can be used to release interfaces so that modules can be unloaded or upgraded without unloading **playercmd** (which would be irreversible).

dropturret

Requires module: autoturret

Possible targets: none

Arguments: none

Drops a turret right where your ship is. The turret will fire 10 level 1 bombs, 1.5 seconds apart, and then disappear.

enablecmdgroup

Possible targets: none

Arguments: <command group>

Enables all the commands in the specified command group. This is only useful after using ?disablecmdgroup.

flaginfo

Possible targets: none

Arguments: none

Displays information (status, location, carrier) about all the flags in the arena.

flagreset

Possible targets: none

Arguments: none

Causes the flag game to immediately reset.

forceding

Requires module: turf_reward

Possible targets: none

Arguments: none

Forces a reward to take place immediately in your current arena.

forcestats

Requires module: turf_stats

Possible targets: none

Arguments: none

Displays stats to arena for previous dings.

freqkick

Requires module: freqowners

Possible targets: player

Arguments: none

Kicks the player off of your freq. The player must be on your freq and must not be an owner himself. The player giving the command, of course, must be an owner.

gamerecord

Requires module: record

Possible targets: none

Arguments: status — record <file> — play <file> — pause — restart — stop

TODO: write more here.

geta

Possible targets: none

Arguments: section:key

Displays the value of an arena setting. Make sure there are no spaces around the colon.

getcm

Possible targets: player or arena

Arguments: none

Prints out the chat mask for the target player, or if no target, for the current arena. The chat mask specifies which types of chat messages are allowed.

getfile

Possible targets: none

Arguments: <filename>

Transfers the specified file from the server to the client. The filename should include the full relative path from the server's base directory.

getg

Possible targets: none

Arguments: section:key

Displays the value of a global setting. Make sure there are no spaces around the colon.

getgroup

Possible targets: player or none

Arguments: none

Prints out the group of the target player.

giveowner

Requires module: freqowners

Possible targets: player

Arguments: none

Allows you to share freq ownership with another player on your current private freq. You can't remove ownership once you give it out, but you are safe from being kicked off yourself, as long as you have ownership.

grplogin

Possible targets: none

Arguments: <group name> <password>

Logs you in to the specified group, if the password is correct.

help

Possible targets: none

Arguments: <command name> — <setting name (section:key)>

Displays help on a command or config file setting. Use **?help section:** to list known keys in that section. Use **?help :** to list known section names.

info

Possible targets: player

Arguments: none

Displays various information on the target player, including which client they are using, their resolution, ip address, how long they have been connected, and bandwidth usage information.

insmod

Possible targets: none

Arguments: <module specifier>

Immediately loads the specified module into the server.

jackpot

Possible targets: none

Arguments: none or <arena name> or all

Displays the current jackpot for this arena, the named arena, or all arenas.

lag

Possible targets: none or player

Arguments: none

Displays basic lag information about you or a target player.

laghist

Possible targets: none or player

Arguments: [-r]

Displays lag histograms. If a -r is given, do this histogram for reliablelatency instead of c2s pings.

laginfo

Possible targets: none or player

Arguments: none

Displays tons of lag information about a player.

last

Possible targets: none

Arguments: none

Tells you the last 10 people to log in.

lastlog

Requires module: log_sysop

Possible targets: none

Arguments: [<number of lines>] [<limiting text>]

Prints out the last 10 lines in the server log. You can specify a number as an argument, it will print that many lines instead. If you specify any text as an argument, besides a number, the display will be limited to lines that contain that text. You can specify both a number and limiting text, just put the number first.

listarena

Possible targets: none

Arguments: <arena name>

Lists the players in the given arena.

listmods

Possible targets: none

Arguments: none

Lists all staff members logged on, which arena they are in, and which group they belong to.

lock

Possible targets: player, freq, or arena

Arguments: [-n]

Locks the specified targets so that they can't change ships. Use ?unlock to unlock them.

Note that this doesn't change anyone's ship. Use ?setship or ?specall for that. If **-n** is present, notifies players of their change in status.

lockarena

Possible targets: arena

Arguments: [-n] [-a] [-i]

Changes the default locked state for the arena so entering players will be locked to spectator mode. Also locks everyone currently in the arena to their ships. The **-n** option means to notify players of their change in status. The **-a** options means to only change the arena's state, and not lock current players. The **-i** option means to only lock entering players to their initial ships, instead of spectator mode.

lsmod

Possible targets: none

Arguments: none

Lists all the modules currently loaded into the server.

moveflag

Possible targets: none

Arguments: <flag id> <owning freq> [<x coord> <y coord>]

Moves the specified flag. You must always specify the freq that will own the flag. The coordinates are optional: if they are specified, the flag will be moved there, otherwise it will remain where it is.

netstats

Possible targets: none

Arguments: none

Prints out some statistics from the network layer, including the number of main menu pings the server has received, the total number of packets it has sent and received, and the number of buffers currently in use versus the number allocated.

neutflag

Possible targets: none

Arguments: <flag id>

Neuts the specified flag in the middle of the arena.

passwd

Possible targets: none

Arguments: <new password>

Changes your local server password. Note that this command only changes the password used by the auth_file authentication mechanism. The billing server is not involved at all.

pausetimer

Possible targets: none

Arguments: none

Pauses the timer. The timer must have been created with ?timer.

prize

Possible targets: player, freq, or arena

Arguments: see description

Gives the specified prizes to the target player(s).

Prizes are specified with an optional count, and then a prize name (e.g. 3 **reps**, **anti**). Negative prizes can be specified with a '-' before the prize name or the count (e.g. -**prox**, -3 **bricks**, 5 -**guns**). More than one prize can be specified in one command. A count without a prize name means **random**. For compatability, numerical prize ids with # are supported.

putfile

Possible targets: none

Arguments: <client filename>:<server filename>

Transfers the specified file from the client to the server. The server filename must be a full path name relative to the base directory of the server. (Remember, servers running on unix systems use forward slashes to separate path components.)

putzip

Possible targets: none

Arguments: <client filename>:<server directory>

Uploads the specified zip file to the server and unzips it in the specified directory. This can be used to efficiently send a large number of files to the server at once.

qalias

qip

Possible targets: none

Arguments: <ip address or pattern>

Queries the alias database for players connecting from that ip. Queries can be an exact address, ?qip 216.34.65.%, or ?qip 216.34.65.0/24.

quickfix

Requires module: quickfix

Possible targets: none

Arguments: <limiting text>

Lets you quickly change arena settings. This will display some list of settings with their

current values and allow you to change them. The argument to this command can be used to limit the list of settings displayed.

rawquery

Possible targets: none

Arguments: <sql code>

Performs a custom sql query on the alias data. The text you type after ?rawquery will be used as the WHERE clause in the query. Examples: ?rawquery name like '%blah%'
?rawquery macid = 34127563 order by lastseen desc

reloadconf

Possible targets: none

Arguments: none

Causes the server to check all config files for modifications since they were last loaded, and reload any modified files.

resetgame

Possible targets: none

Arguments: none

Resets soccer game scores and balls.

rmmod

Possible targets: none

Arguments: <module name>

Attempts to unload the specified module from the server.

score

Possible targets: none

Arguments: none

Returns score of current soccer game.

send

Possible targets: player

Arguments: <arena name>

Sends target player to the named arena. (Works on Continuum users only.)

seta

Possible targets: none

Arguments: section:key=value

Sets the value of an arena setting. Make sure there are no spaces around either the colon or the equals sign.

setcm

Possible targets: player or arena

Arguments: see description

Modifies the chat mask for the target player, or if no target, for the current arena. The arguments must all be of the form `(-|+)(pub|pubmacro|freq|nmefreq|priv|chat|modchat|all)` or `-time <seconds>`. A minus sign and then a word disables that type of chat, and a plus sign enables it. The special type `all` means to apply the plus or minus to all of the above types. `-time` lets you specify a timeout in seconds. The mask will be effective for that time, even across logouts.

Examples:

- If someone is spamming public macros: `:player:?setcm -pubmacro -time 600`
- To disable all blue messages for this arena: `?setcm -pub -pubmacro`
- An equivalent to `*shutup`: `:player:?setcm -all`
- To restore chat to normal: `?setcm +all`

Current limitations: You can't currently restrict a particular frequency. Leaving and entering an arena will remove a player's chat mask, unless it has a timeout.

setfreq

Possible targets: player, freq, or arena

Arguments: <freq number>

Moves the target player to the specified freq.

setg

Possible targets: none

Arguments: section:key=value

Sets the value of a global setting. Make sure there are no spaces around either the colon or the equals sign.

setgroup

Possible targets: player

Arguments: [-a] [-t] <group name>

Assigns the group given as an argument to the target player. The player must be in group `default`, or the server will refuse to change his group. Additionally, the player giving the command must have an appropriate capability: `setgroup_foo`, where `foo` is the group that he's trying to set the target to.

The optional **-t** means to assign the group only for the current session. When the target player logs out or changes arenas, the group will be lost.

The optional **-a** means to make the assignment local to the current arena, rather than being valid in the entire zone.

setscore

Possible targets: none

Arguments: <freq 0 score> [<freq 1 score> [... [<freq 7 score>]]]

Changes score of current soccer game, based on arguments. Only supports first eight freqs, and arena must be in absolute scoring mode (Soccer:CapturePoints < 0).

setship

Possible targets: player, freq, or arena

Arguments: <ship number>

Sets the target player to the specified ship. The argument must be a number from 1 (Warbird) to 8 (Shark), or 9 (Spec).

shipreset

Possible targets: player, freq, or arena

Arguments: none

Resets the target players' ship(s).

shutdown

Possible targets: none

Arguments: [-r]

Immediately shuts down the server, exiting with EXIT_NONE. If **-r** is specified, exit with EXIT_RECYCLE instead. The **run-asss** script will notice EXIT_RECYCLE and restart the server.

specall

Possible targets: player, freq, or arena

Arguments: none

Sends all of the targets to spectator mode.

stats

Possible targets: player or none

Arguments: none

Prints out some basic statistics about the target player, or if no target, yourself.

time

Possible targets: none

Arguments: none

Returns amount of time left in current game.

timer

Possible targets: none

Arguments: <minutes>[:<seconds>]

Set arena timer to minutes:seconds, only in arenas with TimedGame setting off. Note, that the seconds part is optional, but minutes must always be defined (even if zero). If successful, server replies with ?time response.

timereset

Possible targets: none

Arguments: none

Reset a timed game, but only in arenas with Misc:TimedGame in use.

turfinfo

Requires module: turf_reward

Possible targets: none

Arguments: none

Displays the current settings / requirements to recieve awards.

turfresetflags

Requires module: turf_reward

Possible targets: none

Arguments: none

Resets the turf_reward module's and flags module's flag data in your current arena.

turfresettimer

Requires module: turf_reward

Possible targets: none

Arguments: none

Resets the ding timer in your current arena.

turfstats

Requires module: turf_stats

Possible targets: none

Arguments: none

Gets stats to previous dings.

turftime

Requires module: turf_reward

Possible targets: none

Arguments: none

Displays the amount of time till next ding.

unlock

Possible targets: player, freq, or arena

Arguments: [-n]

Unlocks the specified targets so that they can now change ships. An optional -n notifies players of their change in status.

unlockarena

Possible targets: arena

Arguments: [-n] [-a]

Changes the default locked state for the arena so entering players will not be locked to spectator mode. Also unlocks everyone currently in the arena to their ships. The -n options means to notify players of their change in status. The -a option means to only change the arena's state, and not unlock current players.

uptime

Possible targets: none

Arguments: none

Displays how long the server has been running.

usage

Possible targets: player or none

Arguments: none

Displays the usage information (current hours and minutes logged in, and total hours and minutes logged in), as well as the first login time, of the target player, or you if no target.

userdbadm

Possible targets: none

Arguments: status—drop—connect

The subcommand 'status' reports the status of the user database server connection. 'drop' disconnects the connection if it's up, and 'connect' reconnects after dropping or failed login.

userid

Possible targets: player or none

Arguments: none

Displays the user database id of the target player, or yours if no target.

version

Possible targets: none

Arguments: none

Prints out the version and compilation date of the server. It might also print out some information about the machine that it's running on.

warpto

Possible targets: player, freq, or arena

Arguments: <x coord> <y coord>

Warp target player to coordinate x,y.

watchdamage

Possible targets: player, freq, none

Arguments: [0 or 1]

Turns damage watching on and off. If sent to a player, an argument of 1 turns it on, 0 turns it off, and no argument toggles. If sent as a public command, only `?watchdamage 0` is meaningful, and it turns off damage watching on all players.

10 Configuration Reference

All config files used by asss (except `modules.conf`) have the same format and conventions. The format is roughly based on, and is backwards compatible with, the Windows `.ini` file format, so `server.cfg` files can be used as-is, although you'll probably need to add a few settings to get things working well.

Config files are processed line-by-line. All leading and trailing whitespace is ignored. A line is a comment if the first character (ignoring whitespace) is a semicolon or a forward slash. If the first character is a pound sign, it signals a preprocessor directive. These directives work very much like C preprocessor directives: `#include` allows one config file to include another. `#define` allows macros to be defined. Macros cannot currently take arguments. To reference the definition of a macro, you have to use `$(MACRONAME)`, not just the name of the macro. (The parens can be omitted if the character after the end of the macro name isn't alphanumeric.) `#ifdef`, `#ifndef`, `#else`, and `#endif` allow conditional inclusion of sections based on whether a specific macro is defined or not. If a line ends with a backslash, it denotes a line continuation: the following line of the file (or more if that line ends with a backslash) is appended to the original line before it is processed.

The start of a section is a line starting with an open bracket and ending with a closing bracket. The text between the brackets is the section name. Any line containing an equals

sign is a value: the text before the equals is the key name (minus leading and trailing whitespace) and the text after (again minus whitespace) is the value. Section names and values are case-insensitive, but the case of values is preserved. Lines that don't contain an equals sign also specify keys, and their associated value is the empty string. Value-less keys are used primarily in the capability manager, where the presence or absence of a capability is all that's important.

If a key name contains a colon, it is treated specially: the text before the colon is treated as the section name for this key only (it doesn't modify the idea of the "current section") and the text after the colon is the key name.

The following sections describe specific settings. They are sorted alphabetically by section and then by key. The settings are listed with the section and key names separated by a colon. The section name "All" isn't a real section name but means the setting is present in a section for each ship.

10.1 Global settings

Billing:IP

Type: String

The ip address of the user database server (no dns hostnames allowed).

Billing:LocalChatPrefix

Type: String

Secret prefix to prepend to local chats

Billing:Password

Type: String

The password to log in to the user database server with.

Billing:Port

Type: Integer

Default: 1850

The port to connect to on the user database server.

Billing:Proxy

Type: String

This setting allows you to specify an external program that will handle the billing server connection. The program should be prepared to speak the asss billing protocol over its standard input and output. It will get two command line arguments, which are the ip and port of the billing server, as specified in the Billing:IP and Billing:Port settings. The program name should either be an absolute pathname or be located on your \$PATH. */

Billing:RetryInterval

Type: Integer

Default: 180

How many seconds to wait between tries to connect to the user database server.

Billing:ScoreID

Type: Integer

Default: 0

Score realm.

Billing:ServerID

Type: Integer

Default: 0

ServerID identifying zone to user database server.

Billing:ServerName

Type: String

The server name to send to the user database server.

Billing:ServerNetwork

Type: String

The network name to send to the billing server. A network name should identify a group of servers (e.g., SSCX).

Billing:StaffChatPrefix

Type: String

Secret prefix to prepend to staff chats

Billing:StaffChats

Type: String

Comma separated staff zone local list.

Chat:FloodLimit

Type: Integer

Default: 10

How many messages needed to be sent in a short period of time (about a second) to qualify for chat flooding.

Chat:FloodShutup

Type: Integer

Default: 60

How many seconds to disable chat for a player that is flooding chat messages.

Chat:MessageReliable

Type: Boolean

Default: Yes

Whether to send chat messages reliably.

Config:CheckModifiedFilesInterval

Type: Integer

Default: 1500

How often to check for modified config files on disk (in ticks).

Config:FlushDirtyValuesInterval

Type: Integer

Default: 500

How often to write modified config settings back to disk (in ticks).

Directory:Description

Type: String

The server description to send to the directory server. See Directory:Name for more information about the section name.

Directory:Name

Type: String

The server name to send to the directory server. Virtual servers will use section name 'Directory-<vs-name>' for this and other settings in this section, and will fall back to 'Directory' if that section doesn't exist. See Net:Listen help for how to identify virtual servers.

Directory:Password

Type: String

Default: cane

The password used to send information to the directory server. Don't change this.

Directory:Port

Type: Integer

Default: 4991

The port to connect to for the directory server.

General:NewsFile

Type: String

Default: news.txt

The filename of the news file.

General:NewsRefreshMinutes

Type: Integer

Default: 5

How often to check for an updated news.txt.

General:PublicArenas

Type: String

Requires module: ap_multipub

A list of public arena types that the server will place people in when they don't request a specific arena.

General:ShipChangeLimit

Type: Integer

Default: 10

The number of ship changes in a short time (about 10 seconds) before ship changing is

disabled (for about 30 seconds).

Lag:CheckInterval

Type: Integer

Default: 300

How often to check each player for out-of-bounds lag values (in ticks).

Log:FileFlushPeriod

Type: Integer

Default: 10

How often to flush the log file to disk (in minutes).

Log:LogFile

Type: String

Default: asss.log

The name of the log file.

mysql:database

Type: String

Requires module: mysql

The database on the mysql server to use.

mysql:hostname

Type: String

Requires module: mysql

The name of the mysql server.

mysql:password

Type: String

Requires module: mysql

The password to log in to the mysql server as.

mysql:user

Type: String

Requires module: mysql

The mysql user to log in to the server as.

Net:AntiwarpSendPercent

Type: Integer

Default: 5

Percent of position packets with antiwarp enabled to send to the whole arena.

Net:BulletPixels

Type: Integer

Default: 1500

How far away to always send bullets (in pixels).

Net:ChatListen**Type:** String**Requires module:** chatnet

Where to listen for chat protocol connections. Either 'port' or 'ip:port'. Net:Listen will be used if this is missing, except the port number specified there will be incremented by two.

Net:ChatMessageDelay**Type:** Integer**Default:** 20 mod: chatnet

The delay between sending messages to clients using the text-based chat protocol. (To limit bandwidth used by non-playing clients.)

Net:DropTimeout**Type:** Integer**Default:** 3000

How long to get no data from a client before disconnecting him (in ticks).

Net:Listen**Type:** String

A designation for a port and ip to listen on. Format is one of 'port', 'port:connectas', or 'ip:port:connectas'. Listen1 through Listen9 are also supported. A missing or zero-length 'ip' field means all interfaces. The 'connectas' field can be used to treat clients differently depending on which port or ip they use to connect to the server. It serves as a virtual server identifier for the rest of the server.

Net:MaxBufferDelta**Type:** Integer**Default:** 30

The maximum number of reliable packets to buffer for a player.

Net:PositionExtraPixels**Type:** Integer**Default:** 8000

How far away to send positions of players on radar.

Net:WeaponPixels**Type:** Integer**Default:** 2000

How far away to always send weapons (in pixels).

Persist:SyncSeconds**Type:** Integer**Default:** 180

The interval at which all persistent data is synced to the database.

Security:SecurityKickoff

Type: Boolean

Default: No

Whether to kick players off of the server for violating security checks.

10.2 Arena settings

All:AfterburnerEnergy

Type: Integer

Amount of energy required to have 'Afterburners' activated

All:AntiWarpEnergy

Type: Integer

Amount of energy required to have 'Anti-Warp' activated (thousanth per tick)

All:AntiWarpStatus

Type: Integer

Range: 0-2

Whether ships are allowed to receive 'Anti-Warp' 0=no 1=yes 2=yes/start-with

All:AttachBounty

Type: Integer

Bounty required by ships to attach as a turret

All:BombBounceCount

Type: Integer

Number of times a ship's bombs bounce before they explode on impact

All:BombFireDelay

Type: Integer

delay that ship waits after a bomb is fired until another weapon may be fired (in ticks)

All:BombFireEnergy

Type: Integer

Amount of energy it takes a ship to fire a single bomb

All:BombFireEnergyUpgrade

Type: Integer

Extra amount of energy it takes a ship to fire an upgraded bomb. i.e. $L2 = \text{BombFireEnergy} + \text{BombFireEnergyUpgrade}$

All:BombSpeed

Type: Integer

How fast bombs travel

All:BombThrust

Type: Integer

Amount of back-thrust you receive when firing a bomb

All:BrickMax

Type: Integer

Maximum number of Bricks allowed in ships

All:BulletFireDelay

Type: Integer

Delay that ship waits after a bullet is fired until another weapon may be fired (in ticks)

All:BulletFireEnergy

Type: Integer

Amount of energy it takes a ship to fire a single L1 bullet

All:BulletSpeed

Type: Integer

How fast bullets travel

All:BurstMax

Type: Integer

Maximum number of Bursts allowed in ships

All:BurstShrapnel

Type: Integer

Number of bullets released when a 'Burst' is activated

All:BurstSpeed

Type: Integer

How fast the burst shrapnel is for this ship

All:CloakEnergy

Type: Integer

Amount of energy required to have 'Cloak' activated (thousanth per tick)

All:CloakStatus

Type: Integer

Range: 0-2

Whether ships are allowed to receive 'Cloak' 0=no 1=yes 2=yes/start-with

All:DamageFactor

Type: Integer

How likely a the ship is to take damamage (ie. lose a prize) (0=special-case-never, 1=extremely likely, 5000=almost never)

All:DecoyMax

Type: Integer

Maximum number of Decoys allowed in ships

All:DisableFastShooting**Type:** Boolean

If firing bullets, bombs, or thors is disabled after using afterburners (1=enabled) (Cont
.36+)

All:DoubleBarrel**Type:** Boolean

Whether ships fire with double barrel bullets

All:EmpBomb**Type:** Boolean

Whether ships fire EMP bombs

All:Gravity**Type:** Integer

How strong of an effect the wormhole has on this ship (0 = none)

All:GravityTopSpeed**Type:** Integer

Ship are allowed to move faster than their maximum speed while effected by a wormhole.
This determines how much faster they can go (0 = no extra speed)

All:InitialBombs**Type:** Other**Range:** 0-3

Initial level a ship's bombs fire

All:InitialBounty**Type:** Integer

Number of 'Greens' given to ships when they start

All:InitialBrick**Type:** Integer

Initial number of Bricks given to ships when they start

All:InitialBurst**Type:** Integer

Initial number of Bursts given to ships when they start

All:InitialDecoy**Type:** Integer

Initial number of Decoys given to ships when they start

All:InitialEnergy**Type:** Integer

Initial amount of energy that the ship can have

All:InitialGuns

Type: Integer

Range: 0-3

Initial level a ship's guns fire

All:InitialPortal

Type: Integer

Initial number of Portals given to ships when they start

All:InitialRecharge

Type: Integer

Initial recharge rate, or how quickly this ship recharges its energy

All:InitialRepel

Type: Integer

Initial number of Repels given to ships when they start

All:InitialRocket

Type: Integer

Initial number of Rockets given to ships when they start

All:InitialRotation

Type: Integer

Initial rotation rate of the ship (0 = can't rotate, 400 = full rotation in 1 second)

All:InitialSpeed

Type: Integer

Initial speed of ship (0 = can't move)

All:InitialThor

Type: Integer

Initial number of Thor's Hammers given to ships when they start

All:InitialThrust

Type: Integer

Initial thrust of ship (0 = none)

All:LandmineFireDelay

Type: Integer

Delay that ship waits after a mine is fired until another weapon may be fired (in ticks)

All:LandmineFireEnergy

Type: Integer

Amount of energy it takes a ship to place a single L1 mine

All:LandmineFireEnergyUpgrade

Type: Integer

Extra amount of energy it takes to place an upgraded landmine. i.e. $L2 = \text{LandmineFireEnergy} + \text{LandmineFireEnergyUpgrade}$

All:MaxBombs

Type: Integer

Range: 0-3

Maximum level a ship's bombs can fire

All:MaxGuns

Type: Integer

Range: 0-3

Maximum level a ship's guns can fire

All:MaximumEnergy

Type: Integer

Maximum amount of energy that the ship can have

All:MaximumRecharge

Type: Integer

Maximum recharge rate, or how quickly this ship recharges its energy

All:MaximumRotation

Type: Integer

Maximum rotation rate of the ship (0 = can't rotate, 400 = full rotation in 1 second)

All:MaximumSpeed

Type: Integer

Maximum speed of ship (0 = can't move)

All:MaximumThrust

Type: Integer

Maximum thrust of ship (0 = none)

All:MaxMines

Type: Integer

Maximum number of mines allowed in ships

All:MultiFireAngle

Type: Integer

Angle spread between multi-fire bullets and standard forward firing bullets (111 = 1 degree, 1000 = 1 ship-rotation-point)

All:MultiFireDelay

Type: Integer

Delay that ship waits after a multifire bullet is fired until another weapon may be fired (in ticks)

All:MultiFireEnergy**Type:** Integer

Amount of energy it takes a ship to fire multifire L1 bullets

All:PortalMax**Type:** Integer

Maximum number of Portals allowed in ships

All:PrizeShareLimit**Type:** Integer

Maximum bounty that ships receive Team Prizes

All:Radius**Type:** Integer**Default:** 7**Range:** 0-255

The ship's radius from center to outside, in pixels. (Cont .37+)

All:RepelMax**Type:** Integer

Maximum number of Repels allowed in ships

All:RocketMax**Type:** Integer

Maximum number of Rockets allowed in ships

All:RocketTime**Type:** Integer

How long a Rocket lasts (in ticks)

All:SeeBombLevel**Type:** Integer**Range:** 0-4

If ship can see bombs on radar (0=Disabled, 1=All, 2=L2 and up, 3=L3 and up, 4=L4 bombs only)

All:SeeMines**Type:** Boolean

Whether ships see mines on radar

All:ShieldsTime**Type:** Integer

How long Shields lasts on the ship (in ticks)

All:ShrapnelMax**Type:** Integer

Maximum amount of shrapnel released from a ship's bomb

All:ShrapnelRate

Type: Integer

Amount of additional shrapnel gained by a 'Shrapnel Upgrade' prize.

All:SoccerBallFriction

Type: Integer

Amount the friction on the soccer ball (how quickly it slows down – higher numbers mean faster slowdown)

All:SoccerBallProximity

Type: Integer

How close the player must be in order to pick up ball (in pixels)

All:SoccerBallSpeed

Type: Integer

Initial speed given to the ball when fired by the carrier

All:SoccerThrowTime

Type: Integer

Time player has to carry soccer ball (in ticks)

All:StealthEnergy

Type: Integer

Amount of energy required to have 'Stealth' activated (thousandths per tick)

All:StealthStatus

Type: Integer

Range: 0-2

Whether ships are allowed to receive 'Stealth' 0=no 1=yes 2=yes/start-with

All:SuperTime

Type: Integer

How long Super lasts on the ship (in ticks)

All:ThorMax

Type: Integer

Maximum number of Thor's Hammers allowed in ships

All:TurretLimit

Type: Integer

Number of turrets allowed on a ship

All:TurretSpeedPenalty

Type: Integer

Amount the ship's speed is decreased with a turret riding

All:TurretThrustPenalty

Type: Integer

Amount the ship's thrust is decreased with a turret riding

All:UpgradeEnergy

Type: Integer

Amount added per 'Energy Upgrade' Prize

All:UpgradeRecharge

Type: Integer

Amount added per 'Recharge Rate' Prize

All:UpgradeRotation

Type: Integer

Amount added per 'Rotation' Prize

All:UpgradeSpeed

Type: Integer

Amount added per 'Speed' Prize

All:UpgradeThrust

Type: Integer

Amount added per 'Thruster' Prize

All:XRadarEnergy

Type: Integer

Amount of energy required to have 'X-Radar' activated (thousanth per tick)

All:XRadarStatus

Type: Integer

Range: 0-2

Whether ships are allowed to receive 'X-Radar' 0=no 1=yes 2=yes/start-with

Bomb:BBombDamagePercent

Type: Integer

Percentage of normal damage applied to a bouncing bomb (in 0.1%)

Bomb:BombAliveTime

Type: Integer

Time bomb is alive (in ticks)

Bomb:BombDamageLevel

Type: Integer

Amount of damage a bomb causes at its center point (for all bomb levels)

Bomb:BombExplodeDelay

Type: Integer

How long after the proximity sensor is triggered before bomb explodes

Bomb: BombExplodePixels**Type:** Integer

Blast radius in pixels for an L1 bomb (L2 bombs double this, L3 bombs triple this)

Bomb: BombSafety**Type:** Boolean

Whether proximity bombs have a firing safety. If enemy ship is within proximity radius, will it allow you to fire

Bomb: EBombDamagePercent**Type:** Integer

Percentage of normal damage applied to an EMP bomb (in 0.1%)

Bomb: EBombShutdownTime**Type:** Integer

Maximum time recharge is stopped on players hit with an EMP bomb

Bomb: JitterTime**Type:** Integer

How long the screen jitters from a bomb hit (in ticks)

Bomb: ProximityDistance**Type:** Integer

Radius of proximity trigger in tiles (each bomb level adds 1 to this amount)

Brick: BrickSpan**Type:** Integer**Default:** 10

The maximum length of a dropped brick.

Brick: BrickTime**Type:** Integer

How long bricks last (in ticks)

Brick: CountBricksAsWalls**Type:** Boolean**Default:** Yes

Whether bricks snap to the edges of other bricks (as opposed to only snapping to walls).

Bullet: BulletAliveTime**Type:** Integer

How long bullets live before disappearing (in ticks)

Bullet: BulletDamageLevel**Type:** Integer

Maximum amount of damage that a L1 bullet will cause

Bullet:BulletDamageUpgrade**Type:** Integer

Amount of extra damage each bullet level will cause

Bullet:ExactDamage**Type:** Boolean**Default:** No

Whether to use exact bullet damage (Cont .36+)

Burst:BurstDamageLevel**Type:** Integer

Maximum amount of damage caused by a single burst bullet

Chat:RestrictChat**Type:** Integer**Default:** 0

This specifies an initial chat mask for the arena. Don't use this unless you know what you're doing.

Cost:PurchaseAnytime**Type:** Boolean**Default:** No

Whether players can buy items outside a safe zone.

Door:DoorDelay**Type:** Integer

How often doors attempt to switch their state

Door:DoorMode**Type:** Integer

Door mode (-2=all doors completely random, -1=weighted random (some doors open more often than others), 0-255=fixed doors (1 bit of byte for each door specifying whether it is open or not))

Flag:CarryFlags**Type:** Integer

Whether the flags can be picked up and carried (0=no, 1=yes, 2=yes-one at a time)

Flag:DropOwned**Type:** Boolean**Default:** Yes

Whether flags you drop are owned by your team.

Flag:DropRadius**Type:** Integer**Default:** 2

How far from a player do dropped flags appear (in tiles).

Flag:EnterGameFlaggingDelay**Type:** Integer

Time a new player must wait before they are allowed to see flags

Flag:FlagBlankDelay**Type:** Integer

Amount of time that a user can get no data from server before flags are hidden from view for 10 seconds

Flag:FlagCount**Type:** Other**Default:** 0**Range:** 0-256

How many flags are present in this arena.

Flag:FlagDropDelay**Type:** Integer

Time before flag is dropped by carrier (0=never)

Flag:FlagDropResetReward**Type:** Integer

Minimum kill reward that a player must get in order to have his flag drop timer reset

Flag:FlaggerBombFireDelay**Type:** Integer

Delay given to flaggers for firing bombs (zero is ships normal firing rate) (do not set this number less than 20)

Flag:FlaggerBombUpgrade**Type:** Boolean

Whether the flaggers get a bomb upgrade

Flag:FlaggerDamagePercent**Type:** Integer

Percentage of normal damage received by flaggers (in 0.1%)

Flag:FlaggerFireCostPercent**Type:** Integer

Percentage of normal weapon firing cost for flaggers (in 0.1%)

Flag:FlaggerGunUpgrade**Type:** Boolean

Whether the flaggers get a gun upgrade

Flag:FlaggerKillMultiplier**Type:** Integer

Number of times more points are given to a flagger (1 = double points, 2 = triple points)

Flag:FlaggerOnRadar**Type:** Boolean

Whether the flaggers appear on radar in red

Flag:FlaggerSpeedAdjustment**Type:** Integer

Amount of speed adjustment player carrying flag gets (negative numbers mean slower)

Flag:FlaggerThrustAdjustment**Type:** Integer

Amount of thrust adjustment player carrying flag gets (negative numbers mean less thrust)

Flag:FlagReward**Type:** Integer**Requires module:** points_flag**Default:** 5000The basic flag reward is calculated as $(\text{players in arena})^2 * \text{reward} / 1000$.**Flag:FriendlyTransfer****Type:** Boolean**Default:** Yes

Whether you get a teammates flags when you kill him.

Flag:GameType**Type:** Enumerated**Default:** \$FLAGGAME_NONE

The flag game type for this arena. \$FLAGGAME_NONE means no flag game, \$FLAGGAME_BASIC is a standard warzone or running zone game, and \$FLAGGAME_TURF specifies immobile flags.

Flag:NeutOwned**Type:** Boolean**Default:** No

Whether flags you neut-drop are owned by your team.

Flag:NeutRadius**Type:** Integer**Default:** 2

How far from a player do neut-dropped flags appear (in tiles).

Flag:NoDataFlagDropDelay**Type:** Integer

Amount of time that a user can get no data from server before flags he is carrying are dropped

Flag:PersistentTurfOwners**Type:** Boolean

Default: Yes

Whether ownership of turf flags persists even when the arena is empty (or the server crashes).

Flag:ResetDelay

Type: Integer

Default: 0

The length of the delay between flag games.

Flag:SpawnRadius

Type: Integer

Default: 50

How far from the spawn center that new flags spawn (in tiles).

Flag:SpawnX

Type: Integer

Default: 512

The X coordinate that new flags spawn at (in tiles).

Flag:SpawnY

Type: Integer

Default: 512

The Y coordinate that new flags spawn at (in tiles).

Flag:SplitPoints

Type: Boolean

Default: No

Whether to split a flag reward between the members of a freq or give them each the full amount.

General:DesiredPlaying

Type: Integer

Requires module: ap_multipub

Default: 15

This controls when the server will create new public arenas.

General:LevelFiles

Type: String

A list of extra files to send to the client for downloading. A '+' before any file means it's marked as optional.

General:Map

Type: String

The name of the level file for this arena.

General:MaxPlaying

Type: Integer

Default: 100

This is the most players that will be allowed to play in the arena at once. Zero means no limit.

General:NeedCap

Type: String

Requires module: arenaperm

If this setting is present for an arena, any player entering the arena must have the capability specified this setting. This can be used to restrict arenas to certain groups of players.

Kill:BountyIncreaseForKill

Type: Integer

Number of points added to players bounty each time he kills an opponent

Kill:EnterDelay

Type: Integer

How long after a player dies before he can re-enter the game (in ticks)

Kill:FlagValue

Type: Integer

Default: 100

The number of extra points to give for each flag a killed player was carrying.

Kill:JackpotBountyPercent

Type: Integer

Default: 0

The percent of a player's bounty added to the jackpot on each kill. Units: 0.1%.

Kill:MaxBonus

Type: Integer

FIXME: fill this in

Kill:MaxPenalty

Type: Integer

FIXME: fill this in

Kill:RewardBase

Type: Integer

FIXME: fill this in

Lag:C2SLossToDisallowFlags

Type: Integer

Default: 50

The C2S packetloss when a player isn't allowed to pick up flags or balls. Units 0.1%.

Lag:C2SLossToSpec

Type: Integer

Default: 150

The C2S packetloss at which to force a player to spec. Units 0.1%.

Lag:PingToDisallowFlags

Type: Integer

Default: 500

The average ping when a player isn't allowed to pick up flags or balls.

Lag:PingToIgnoreAllWeapons

Type: Integer

Default: 1000

The average ping when all weapons should be ignored.

Lag:PingToSpec

Type: Integer

Default: 600

The average ping at which to force a player to spec.

Lag:PingToStartIgnoringWeapons

Type: Integer

Default: 300

The average ping to start ignoring weapons at.

Lag:S2CLossToDisallowFlags

Type: Integer

Default: 50

The S2C packetloss when a player isn't allowed to pick up flags or balls. Units 0.1%.

Lag:S2CLossToIgnoreAllWeapons

Type: Integer

Default: 500

The S2C packetloss when all weapons should be ignored. Units 0.1%.

Lag:S2CLossToSpec

Type: Integer

Default: 150

The S2C packetloss at which to force a player to spec. Units 0.1%.

Lag:S2CLossToStartIgnoringWeapons

Type: Integer

Default: 40

The S2C packetloss to start ignoring weapons at. Units 0.1%.

Lag:SpikeToSpec

Type: Integer

Default: 3000

The amount of time the server can get no data from a player before forcing him to spectator

mode (in ms).

Lag:WeaponLossToDisallowFlags

Type: Integer

Default: 50

The weapon packetloss when a player isn't allowed to pick up flags or balls. Units 0.1%.

Lag:WeaponLossToIgnoreAllWeapons

Type: Integer

Default: 500

The weapon packetloss when all weapons should be ignored. Units 0.1%.

Lag:WeaponLossToSpec

Type: Integer

Default: 150

The weapon packetloss at which to force a player to spec. Units 0.1%.

Lag:WeaponLossToStartIgnoringWeapons

Type: Integer

Default: 40

The weapon packetloss to start ignoring weapons at. Units 0.1%.

Latency:ClientSlowPacketSampleSize

Type: Integer

Number of packets to sample S2C before checking for kickout

Latency:ClientSlowPacketTime

Type: Integer

Amount of latency S2C that constitutes a slow packet

Latency:S2CNoDataKickoutDelay

Type: Integer

Amount of time a user can receive no data from server before connection is terminated

Latency:SendRoutePercent

Type: Integer

Percentage of the ping time that is spent on the C2S portion of the ping (used in more accurately synchronizing clocks)

Message:AllowAudioMessages

Type: Boolean

Whether players can send audio messages

Mine:MineAliveTime

Type: Integer

Time that mines are active (in ticks)

Mine:TeamMaxMines**Type:** Integer

Maximum number of mines allowed to be placed by an entire team

Misc:ActivateAppShutdownTime**Type:** Integer

Amount of time a ship is shutdown after application is reactivated

Misc:AllowSavedShips**Type:** Integer

Whether saved ships are allowed (do not allow saved ship in zones where sub-arenas may have differing parameters)

Misc:AntiWarpSettleDelay**Type:** Integer

How many ticks to activate a fake antiwarp after attaching, portaling, or warping.

Misc:BounceFactor**Type:** Integer

How bouncy the walls are (16 = no speed loss)

Misc:DecoyAliveTime**Type:** Integer

Time a decoy is alive (in ticks)

Misc:DisableBallKilling**Type:** Boolean**Default:** No

Whether to disable ball killing in safe zones (Cont .38+)

Misc:DisableBallThroughWalls**Type:** Boolean**Default:** No

Whether to disable ball-passing through walls (Cont .38+)

Misc:DisableScreenshot**Type:** Boolean**Default:** No

Whether to disable Continuum's screenshot feature (Cont .37+)

Misc:DontShareBrick**Type:** Boolean**Default:** No

Whether Brick greens don't go to the whole team.

Misc:DontShareBurst**Type:** Boolean

Default: No

Whether Burst greens don't go to the whole team.

Misc:DontShareThor

Type: Boolean

Default: No

Whether Thor greens don't go to the whole team.

Misc:ExtraPositionData

Type: Integer

Whether regular players receive sysop data about a ship

Misc:FrequencyShift

Type: Integer

Amount of random frequency shift applied to sounds in the game

Misc:GreetMessage

Type: String

The message to send to each player on entering the arena.

Misc:MaxXres

Type: Integer

Default: 0

Maximum screen width allowed in the arena. Zero means no limit.

Misc:MaxYres

Type: Integer

Default: 0

Maximum screen height allowed in the arena. Zero means no limit.

Misc:NearDeathLevel

Type: Integer

Amount of energy that constitutes a near-death experience (ships bounty will be decreased by 1 when this occurs – used for dueling zone)

Misc:SafetyLimit

Type: Integer

Amount of time that can be spent in the safe zone (in ticks)

Misc:SeeEnergy

Type: Enumerated

Default: \$SEE_NONE

Whose energy levels everyone can see: \$SEE_NONE means nobody else's, \$SEE_ALL is everyone's, \$SEE_TEAM is only teammates, and \$SEE_SPEC is only the player you're spectating.

Misc:SendPositionDelay

Type: Integer

Amount of time between position packets sent by client

Misc:SheepMessage

Type: String

The message that appears when someone says ?sheep

Misc:SlowFrameCheck

Type: Integer

Whether to check for slow frames on the client (possible cheat technique) (flawed on some machines, do not use)

Misc:SpecSeeEnergy

Type: Enumerated

Default: \$SEE_NONE

Whose energy levels spectators can see. Check 'SeeEnergy' for the description of the options.

Misc:TeamKillPoints

Type: Boolean

Default: No

Whether points are awarded for a team-kill.

Misc:TickerDelay

Type: Integer

Amount of time between ticker help messages

Misc:TimedGame

Type: Integer

Default: 0

How long the game timer lasts (in ticks). Zero to disable.

Misc:VictoryMusic

Type: Integer

Whether the zone plays victory music or not

Misc:WarpPointDelay

Type: Integer

How long a portal is active

Misc:WarpRadiusLimit

Type: Integer

When ships are randomly placed in the arena, this parameter will limit how far from the center of the arena they can be placed (1024=anywhere)

Modules:AttachModules

Type: String

This is a list of modules that you want to take effect in this arena. Not all modules need to be attached to arenas to function, but some do.

Periodic:RewardDelay

Type: Integer

Default: 0

The interval between periodic rewards (in ticks). Zero to disable.

Periodic:RewardMinimumPlayers

Type: Integer

Default: 0

The minimum players necessary in the arena to give out periodic rewards.

Periodic:RewardPoints

Type: Integer

Requires module: points-periodic

Default: 100

Periodic rewards are calculated as follows: If this setting is positive, you get this many points per flag. If it's negative, you get it's absolute value points per flag, times the number of players in the arena.

Prize:DeathPrizeTime

Type: Integer

How long the prize exists that appears after killing somebody

Prize:EngineShutdownTime

Type: Integer

Time the player is affected by an 'Engine Shutdown' Prize (in ticks)

Prize:MinimumVirtual

Type: Integer

Distance from center of arena that prizes/flags/soccer-balls will spawn

Prize:MultiPrizeCount

Type: Integer

Number of random greens given with a MultiPrize

Prize:PrizeDelay

Type: Integer

How often prizes are regenerated (in ticks)

Prize:PrizeFactor

Type: Integer

Number of prizes hidden is based on number of players in game. This number adjusts the formula, higher numbers mean more prizes. (Note: 10000 is max, 10 greens per person)

Prize:PrizeHideCount

Type: Integer

Number of prizes that are regenerated every PrizeDelay

Prize:PrizeMaxExist

Type: Integer

Maximum amount of time that a hidden prize will remain on screen. (actual time is random)

Prize:PrizeMinExist

Type: Integer

Minimum amount of time that a hidden prize will remain on screen. (actual time is random)

Prize:PrizeNegativeFactor

Type: Integer

Odds of getting a negative prize. (1 = every prize, 32000 = extremely rare)

Prize:TakePrizeReliable

Type: Integer

Whether prize packets are sent reliably (C2S)

Prize:UpgradeVirtual

Type: Integer

Amount of additional distance added to MinimumVirtual for each player that is in the game

PrizeWeight:AllWeapons

Type: Integer

Likelihood of 'Super!' prize appearing

PrizeWeight:AntiWarp

Type: Integer

Likelihood of 'AntiWarp' prize appearing

PrizeWeight:Bomb

Type: Integer

Likelihood of 'Bomb Upgrade' prize appearing

PrizeWeight:BouncingBullets

Type: Integer

Likelihood of 'Bouncing Bullets' prize appearing

PrizeWeight:Brick

Type: Integer

Likelihood of 'Brick' prize appearing

PrizeWeight:Burst

Type: Integer
Likelihood of 'Burst' prize appearing

PrizeWeight:Cloak
Type: Integer
Likelihood of 'Cloak' prize appearing

PrizeWeight:Decoy
Type: Integer
Likelihood of 'Decoy' prize appearing

PrizeWeight:Energy
Type: Integer
Likelihood of 'Energy Upgrade' prize appearing

PrizeWeight:Glue
Type: Integer
Likelihood of 'Engine Shutdown' prize appearing

PrizeWeight:Gun
Type: Integer
Likelihood of 'Gun Upgrade' prize appearing

PrizeWeight:MultiFire
Type: Integer
Likelihood of 'MultiFire' prize appearing

PrizeWeight:MultiPrize
Type: Integer
Likelihood of 'Multi-Prize' prize appearing

PrizeWeight:Portal
Type: Integer
Likelihood of 'Portal' prize appearing

PrizeWeight:Proximity
Type: Integer
Likelihood of 'Proximity Bomb' prize appearing

PrizeWeight:QuickCharge
Type: Integer
Likelihood of 'Recharge' prize appearing

PrizeWeight:Recharge
Type: Integer
Likelihood of 'Full Charge' prize appearing (not 'Recharge')

PrizeWeight:Repel

Type: Integer
Likelihood of 'Repel' prize appearing

PrizeWeight:Rocket
Type: Integer
Likelihood of 'Rocket' prize appearing

PrizeWeight:Rotation
Type: Integer
Likelihood of 'Rotation' prize appearing

PrizeWeight:Shields
Type: Integer
Likelihood of 'Shields' prize appearing

PrizeWeight:Shrapnel
Type: Integer
Likelihood of 'Shrapnel Upgrade' prize appearing

PrizeWeight:Stealth
Type: Integer
Likelihood of 'Stealth' prize appearing

PrizeWeight:Thor
Type: Integer
Likelihood of 'Thor' prize appearing

PrizeWeight:Thruster
Type: Integer
Likelihood of 'Thruster' prize appearing

PrizeWeight:TopSpeed
Type: Integer
Likelihood of 'Speed' prize appearing

PrizeWeight:Warp
Type: Integer
Likelihood of 'Warp' prize appearing

PrizeWeight:XRadar
Type: Integer
Likelihood of 'XRadar' prize appearing

Radar:MapZoomFactor
Type: Integer
A number representing how far you can see on radar

Radar:RadarMode

Type: Integer

Radar mode (0=normal, 1=half/half, 2=quarters, 3=half/half-see team mates, 4=quarters-see team mates)

Radar:RadarNeutralSize

Type: Integer

Size of area between blinded radar zones (in pixels)

Repel:RepelDistance

Type: Integer

Number of pixels from the player that are affected by a repel

Repel:RepelSpeed

Type: Integer

Speed at which players are repelled

Repel:RepelTime

Type: Integer

Time players are affected by the repel (in ticks)

Rocket:RocketSpeed

Type: Integer

Speed value given while a rocket is active

Rocket:RocketThrust

Type: Integer

Thrust value given while a rocket is active

Shrapnel:InactiveShrapDamage

Type: Integer

Amount of damage shrapnel causes in it's first 1/4 second of life

Shrapnel:Random

Type: Boolean

Whether shrapnel spreads in circular or random patterns

Shrapnel:ShrapnelDamagePercent

Type: Integer

Percentage of normal damage applied to shrapnel (relative to bullets of same level) (in 0.1%)

Shrapnel:ShrapnelSpeed

Type: Integer

Speed that shrapnel travels

Soccer:AllowBombs

Type: Boolean

Whether the ball carrier can fire his bombs

Soccer:AllowGoalByDeath

Type: Boolean

Default: No

Whether a goal is scored if a player dies carrying the ball on a goal tile.

Soccer:AllowGuns

Type: Boolean

Whether the ball carrier can fire his guns

Soccer:BallBlankDelay

Type: Integer

Amount of time a player can receive no data from server and still pick up the soccer ball

Soccer:BallBounce

Type: Boolean

Whether the ball bounces off walls

Soccer:BallCount

Type: Integer

Default: 0

The number of balls in this arena.

Soccer:BallLocation

Type: Boolean

Whether the balls location is displayed at all times or not

Soccer:GoalDelay

Type: Integer

Default: 0

How long after a goal before the ball appears (in ticks).

Soccer:Mode

Type: Enumerated

Goal configuration (\$GOAL_ALL, \$GOAL_LEFTRIGHT, \$GOAL_TOPBOTTOM, \$GOAL_CORNERS_3_1, \$GOAL_CORNERS_1_3, \$GOAL_SIDES_3_1, \$GOAL_SIDES_1_3)

Soccer:NewGameDelay

Type: Integer

Default: -3000

How long to wait between games. If this is negative, the actual delay is random, between zero and the absolute value. Units: ticks.

Soccer:PassDelay

Type: Integer

How long after the ball is fired before anybody can pick it up (in ticks)

Soccer:SendTime

Type: Integer

Default: 1000

Range: 100-3000

How often the server sends ball positions (in ticks).

Soccer:SpawnRadius

Type: Integer

Default: 20

How far from the spawn center the ball can spawn (in tiles).

Soccer:SpawnX

Type: Integer

Default: 512

Range: 0-1023

The X coordinate that the ball spawns at (in tiles).

Soccer:SpawnY

Type: Integer

Default: 512

Range: 0-1023

The Y coordinate that the ball spawns at (in tiles).

Soccer:UseFlagger

Type: Boolean

If player with soccer ball should use the Flag:Flagger* ship adjustments or not

Spawn:TeamN-X/Y/Radius

Type: Integer

Specify spawn location and radius per team. If only Team0 variables are set, all teams use them, if Team0 and Team1 variables are set, even teams use Team0 and odd teams use Team1. It is possible to set spawn positions for upto 4 teams (Team0-Team3). (Cont .38+)

Spectator:HideFlags

Type: Boolean

Default: No

Whether to show dropped flags to spectators (Cont .36+)

Spectator:NoXRadar

Type: Boolean

Default: No

Whether spectators are disallowed from having X radar (Cont .36+)

Team:AllowFreqOwners

Type: Boolean

Default: Yes

Whether to enable the freq ownership feature in this arena.

Team:DesiredTeams

Type: Integer

Default: 2

The number of teams that the freq balancer will form as players enter.

Team:FrequencyShipTypes

Type: Boolean

Default: No

If this is set, freq 0 will only be allowed to use warbirds, freq 1 can only use javelins, etc.

Team:IncludeSpectators

Type: Boolean

Default: No

Whether to include spectators when enforcing maximum freq sizes.

Team:InitalSpec

Type: Boolean

Default: No

If players entering the arena are always assigned to spectator mode.

Team:MaxFrequency

Type: Integer

Default: 9999

Range: 0-9999

The highest frequency allowed. Set this below PrivFreqStart to disallow private freqs.

Team:MaxPerPrivateTeam

Type: Integer

Default: 0

The maximum number of players on a private freq. Zero means no limit.

Team:MaxPerTeam

Type: Integer

Default: 0

The maximum number of players on a public freq. Zero means no limit.

Team:PrivFreqStart

Type: Integer

Default: 100

Range: 0-9999

Freqs above this value are considered private freqs.

Team:SpectatorFrequency

Type: Integer

Default: 8025

Range: 0-9999

The frequency that spectators are assigned to, by default.

Toggle:AntiWarpPixels

Type: Integer

Distance Anti-Warp affects other players (in pixels) (note: enemy must also be on radar)

TurfReward:JackpotModifier

Type: Integer

Default: 200

Modifies the number of points to award. Meaning varies based on reward algorithm being used. For \$REWARD_STD: jackpot = JackpotModifier * # players

TurfReward:MinFlags

Type: Integer

Default: 1

The minimum number of flags needed to be owned by a freq for that team to be eligible to receive points.

TurfReward:MinFlagsPercent

Type: Integer

Default: 0

The minimum percent of flags needed to be owned by a freq for that team to be eligible to receive points. (ex. 18532 means 18.532%)

TurfReward:MinPercent

Type: Integer

Default: 0

The minimum percent of points needed to be owned by a freq for that team to be eligible to receive points. (ex. 18532 means 18.532%)

TurfReward:MinPlayersArena

Type: Integer

Default: 6

The minimum number of players needed in the arena for anyone to be eligible to receive points.

TurfReward:MinPlayersFreq

Type: Integer

Default: 3

The minimum number of players needed on a freq for that team to be eligible to receive points.

TurfReward:MinTeams

Type: Integer

Default: 2

The minimum number of teams needed in the arena for anyone to be eligible to receive

points.

TurfReward:MinWeights

Type: Integer

Default: 1

The minimum number of weights needed to be owned by a freq for that team to be eligible to receive points.

TurfReward:MinWeightsPercent

Type: Integer

Default: 0

The minimum percent of weights needed to be owned by a freq for that team to be eligible to receive points. (ex. 18532 means 18.532%)

TurfReward:MultiArenaID

Type: Integer

Default: 0

Used for multi-arena (cross arena) scoring only. Defines the set of arenas the arena is associated with (parallels the idea of multicast addresses in networking). If this arena is not using a multi-arena scoring method, set to 0 (or simply remove this setting from the conf). Note: MultiArena scoring is not currently implemented

TurfReward:RecoverDings

Type: Integer

Default: 1

After losing a flag, the number of dings allowed to pass before a freq loses the chance to recover. 0 means you have no chance of recovery after it dings (to recover, you must recover before any ding occurs), 1 means it is allowed to ding once and you still have a chance to recover (any ding after that you lost chance of full recovery), ...

TurfReward:RecoverMax

Type: Integer

Default: -1

Maximum number of times a flag may be recovered. (-1 means no max)

TurfReward:RecoverTime

Type: Integer

Default: 300

After losing a flag, the time (seconds) allowed to pass before a freq loses the chance to recover.

TurfReward:RecoveryCutoff

Type: Enumerated

Default: \$TR_RECOVERY_DINGS

Style of recovery cutoff to be used. \$TR_RECOVERY_DINGS - recovery cutoff based on RecoverDings. \$TR_RECOVERY_TIME - recovery cutoff based on RecoverTime. \$TR_RECOVERY_DINGS_AND_TIME - recovery cutoff based on both RecoverDings and

RecoverTime.

TurfReward:RewardStyle

Type: Enumerated

Default: \$REWARD_STD

The reward algorithm to be used. Default is \$REWARD_STD for standard weighted scoring. Other built in algorithms are: \$REWARD_DISABLED: disable scoring, \$REWARD_PERIODIC: normal periodic scoring but with the stats, \$REWARD_FIXED_PTS: each team gets a fixed # of points based on 1st, 2nd, 3rd,... place \$REWARD_STD_MULTI: standard weighted scoring + this arena is scored along with other arenas simultaneously. Note: currently only \$REWARD_STD and \$REWARD_PERIODIC are implemented.

TurfReward:SetWeights

Type: Integer

Default: 0

How many weights to set from cfg (16 means you want to specify Weight0 to Weight15). If set to 0, then by default one weight is set with a value of 1.

TurfReward:TimerInitial

Type: Integer

Default: 6000

Initial turf_reward ding timer period.

TurfReward:TimerInterval

Type: Integer

Default: 6000

Subsequent turf_reward ding timer period.

TurfReward:WeightCalc

Type: Enumerated

Default: \$TR_WEIGHT_DINGS

The method weights are calculated. \$TR_WEIGHT_TIME means each weight stands for one minute (ex: Weight004 is the weight for a flag owned for 4 minutes. \$TR_WEIGHT_DINGS means each weight stands for one ding of ownership (ex: Weight004 is the weight for a flag that was owned during 4 dings

Wormhole:GravityBombs

Type: Boolean

Whether a wormhole affects bombs

Wormhole:SwitchTime

Type: Integer

How often the wormhole switches its destination

10.3 Other settings

General:AllowUnknown

File: passwd.conf

Type: Boolean

Requires module: auth_file

Default: Yes

Determines whether to allow players not listed in the password file.

10.4 More detail on specific sections

10.4.1 Flags

Until I have time to rework my notes into a nice document, this will have to do:

quick guide to transition flag settings:

(all these go in the [Flag] section)

OLD SETTINGS TO KEEP

FlaggerOnRadar=1

FlaggerKillMultiplier=2

FlaggerGunUpgrade=1

FlaggerBombUpgrade=1

FlaggerFireCostPercent=1000

FlaggerDamagePercent=1000

FlaggerBombFireDelay=0

FlaggerSpeedAdjustment=0

FlaggerThrustAdjustment=0

CarryFlags=1

make sure this agrees with GameType (see below)

FlagDropDelay=3000

FlagDropResetReward=0

EnterGameFlaggingDelay=1000

FlagBlankDelay=200

NoDataFlagDropDelay=500

OLD SETTINGS TO CHANGE

FlagMode=1

get rid of this, there's a new way to specify game types

FlagResetDelay=1440000

rename to ResetDelay (not currently implemented)

MaxFlags=3

change to FlagCount=3

RandomFlags=0

get rid of this, use FlagCount=5-10

FlagReward=2500

keep this

FlagRewardMode=0

change name to SplitPoints

FlagTerritoryRadius=3

get rid of this, use DropRadius

FlagTerritoryRadiusCentroid=0

get rid of this, use DropRadius

FriendlyTransfer=0

keep this the same

NEW SETTINGS

GameType = FLAGGAME_BASIC
options: FLAGGAME_NONE, FLAGGAME_BASIC, FLAGGAME_TURF, FLAGGAME_CUSTOM
basic is warzone/running with movable flags. turf is turf (be sure to set CarryFlags=0, for now). custom means you have to load a module to define a new game. note that those constants are in settings/flaggames.h

SpawnX = 512
SpawnY = 512
SpawnRadius = 1024
define where flags spawn and how far from that center

DropRadius = 2
how far from a ship will flags drop

NeutRadius = 2
how far from a ship will neutered flags appear

DropOwned = YES
are dropped flags owned by the freq?

NeutOwned = NO
are neutered flags owned by the freq? (obviously, YES prevents neuting)

10.4.2 Energy viewing

There are two arena settings that control whether players see other player's energy and ship inventory (from spec):

- **Misc:SpecSeeEnergy** This affects what players in spec see. If it's set to **SEE_ALL**, a player will see inventory/energy for the player he is spec'ing, plus energy for all other players. If it's **SEE_SPEC**, a player will only see energy/inventory for the player he is spec'ing. **SEE_NONE** will disable all extra information for spec'ers.
- **Misc:SeeEnergy** If this is set to **SEE_ALL**, everyone will see everyone else's energy. If it's **SEE_TEAM**, you will only see the energy of your teammates. If it's **SEE_NONE**, no one will see other's energy.

In addition, there are two capabilities that override the above settings. **seeepd** allows players to see energy/inventory from spec, and **seenrg** allows energy viewing while playing.

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