RhostMUSH Handbook

wstarter

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The RhostMUSH source tree offers many abilities and options not normally found in any other flavor of mush. This doesn't make it better than other servers (though we think so *j/k*) but it does give you a wider selection of configurability, which, as you know, is the best part of setting up a mush. (yea, right)

ONE

RHOSTMUSH OFFERS THE FOLLOWING OVER OTHER MUSHES

- A high-performance duel-quota system.

- A complete rewrite of key areas and referbishments of all the other areas.

- An on-line recover tool for accidental db destruction.

- Multi-wizard architecture for better control of staff.

- Multi-power system to tweek abilities of players.

- Multi-zone system where people can belong to multiple zones.

- Built in error correction for db corruption or other misuse.

- Built in accounting for those annoying twinks who try to hack.

- Many new functions and commands not seen anywhere else.

- A lot more that could drag this document out for pages.

1.1 What RhostMUSH is about and what's so great about RhostMUSH

RhostMUSH was founded in 1989, originally by Natasha Davis (Nyctasia) and as a branch from the original release of TinyMUD code. It was her desire to make a game that was flexible, with multiple levels of progression and highly customizeable. She lost time and interest and passed the game to Steve Shivers (Seawolf), Mike McDermott (Thorin), and Jace Hoppel (Ashen-Shugar)

Through their work, the stability improved, we fixed it to be multi-platform and as bug free as we could possibly make it. We introduced several methods both in game and in source that allowed consistent memory bounds checking and various alerts for any mischievous naughtyness in-game or possibilities of any hacks, patches, or alterations in the code causing leaks or issues.

While not perfect, it has allowed us to have an absolutely outstanding turn around for any bugs sent our way, which anyone who uses RhostMUSH will attest to.

Over the years, others have joined the RhostMUSH team, including Ambrosia (who is the current dev lead), Lensman, Kage (who kindly provided the UTF8/unicode port), Jeff/Loki, Rook, Noltar, and Odin.

We also have had hundreds of people who have offered (and provided) help, patches, suggestions, bug fixes, and alternations all on their own and every single one will have had their name mentioned in the RHOST.CHANGES file in the readme directory. It's far too large to have in the online help files.

RhostMUSH today provides an amazing tool that allows nearly entire customization in-game of every single feature available in Rhost without having the requirement to modify the hardcode. This includes but is not limited to:

1.1.1 Recycle bin

Yup, you guessed it. RhostMUSH has a windows like recycle bin. This means the objects you @nuke and @destroy become 'destroyed' but not recycled until they are @purged. If you use the Myrddin CRON in the Mushcode directory, it by default sets up a job to purge anything over 30 days old, which should be more than sufficient for any needs. The goodness of this? You can recover nuked things from any period of time, as long as they were not @purged first. Commands: @purge, @nuke, @destroy, @recover, @reclist

1.1.2 @snapshot

Live image snapshots to unload or load to and from disk. As many snapshots as you want, as often as you want. It essentially does a flatfile dump of a dbref#. Great for backups or cross-Rhost portability. Command: @snapshot

1.1.3 Wizard and Immortals by default

- are spoofable. Meaning all their @pemits by default will not trigger NOSPOOF. If you do not wish this, set the SPOOF flag this applies to anyone below their level.

- override all locks. There's two flags to disable this. NO_OVERRIDE to stop overriding all locks (including attribs) and NO_USELOCK to just stop overriding uselocks. This applies to anything their level and lower.

- optionally cloak from all non-immortals/God player. This can be highly abused if not careful and there is a @depower to disable cloaking and/or dark that will disable this.

- immortals can optionally supercloak from even wizards. this can not be disabled, and you must consider that immortals should be treated as the God player (#1) since they are effectively #1 in nearly every way.

1.1.4 Titles and Captions to a player's name

@caption and @titlecaption

1.1.5 Have an alternate name with locks for NPC obfuscation

@altname @lock/altname

1.1.6 Have multiple player aliases

As well as a method to reserve player names per player w/o revealing who has what name. @protect

1.1.7 Actively control how dark works both game-wide and individually

@depower dark @admin allow_whodark, sweep_dark, command_dark, lcon_checks_dark,

  secure_dark, see_owned_dark, idle_wiz_dark, player_dark

@toggle snuffdark @flagdef to redefine who and what can set the DARK flag

1.1.8 Make config file changes in-game without having to reboot or have shell access

@admin admin_object

1.1.9 Execute any binary or script as a localized function

EXECSCRIPT (power), SIDEFX (flag)

1.1.10 Customized percent substitutions (like %n, %#, etc)

@admin sub_include, @hook

1.1.11 Redefine percent substitutions (like %n, %#, etc)

@admin sub_override, @hook

1.1.12 Localize command and function overrides in a sandbox

@icmd, @lfunction, subeval(), sandbox()

1.1.13 Multiple Zones

Have multiple zones which can optionally belong to multiple targets (multiple zones per target allowable!)
@zone, zones, lzone(), zonecmd()

1.1.14 Optionally control, enable, or disable sideeffects

@admin sideeffects, SIDEFX (flag)

1.1.15 Have 31 cross-interactive realities for locations

This works as a truly independant and self-contained environment. A room can have 31 'layers', each 'layer' is a reality in the same physical space. These layers can work independently or allow interaction with other layers for vast customization. This affects all methods within the game including all matching, looking, $commands, listens, movement, interaction, pretty much every single aspect of mushing. REALITY LEVELS

1.1.16 Override any command with softcode

@admin access (check ignore) Master room $commands to then override the hardcode

1.1.17 The abillity to raise or lower permissions on the various

staff bitlevels for each player. @power, @depower, TOGGLES, FLAGS

1.1.18 Customize new commands on the connect screen

@admin file_object2

1.1.19 Softcode any txt file (like connect.txt)

and have it evaluate in-game. It evaluates as the object it is on. @admin file_object

1.1.20 Advanced tracing methods for debugging your code including labels!

Commands: @label Functions: parenmatch(), trace() Toggles: CPUTIME Flags: TRACE Attributes: TRACE_GREP, TRACE, TRACE_COLOR, TRACE_COLOR_<attr> Substitutions: %_

1.1.21 Built in pretty-printing of attributes with the parenmatch() function

Example Code Output : @emit [add(1,sub(2,div(3,4)),5)];@emit [extract(get(me/foo),3,1)

Example Pretty Print: @emit [

    add(

        1,sub(

            2,div(3,4

)

        ),5

)

];@emit [

    extract(

        get(me/foo

        ),3,1

)

]

1.1.22 Plenty more not mentioned!

The flexibility to customize RhostMUSH is what is most daunting. Don't fret, you don't need to do it to run Rhost-MUSH successfully. In fact, the default configuration is mostly compatible with MUSH and will work correctly out of the box for most needs. For those wishing to play, of course the sky is the limit of what you want to do.

1.1.23 Advanced features of RhostMUSH

Debugging/Tracing

- Debugging in Rhost allows for advanced features like expressing where and when to do debugging via a trace() function, with toggled labels, and the ability to grep content from trace output. There also exists features to color-match parenthesis, braces, and brackets in-game as well as pretty print the output of commands and functions. - help trace - help %_ - help trace() - help parenmatch() - help parenstr()

Zoning

- Zoning in Rhost allows the same functionality of Penn and MUX, though the syntax is different. It also allows the ability to belong to multiple zones at the same time and take advantage of mulitple zones at once. This allows for increased levels of complexity. - help zones - help @zone - help zonecmd() - help lzone() - help @Lock type twink - help @lock type zone

Reality Levels

- Reality levels allows for the ability to have a sandboxed 'existance' in each physical location across the entirity of the mush. Each reality is its own sandbox and can either stand alone or work dependently with other realities. A person can belong to multiple realities at the same time, and realities is geared to a method for send and receive. Each 'method' requires to be in the given reality to affect it. - help reality levels - wizhelp chkreality - wizhelp reaity level - help @Lock type user

Function and Command Overriding

- Functions and commands can both be overridden with softcode. To override a hardcoded command you first set the command ignore. There are various levels of ignoring so that you could have it ignored from mortals but have it executed fine for non-mortals. This allows you to use the actual physical command within a softcode override. You may also use @Hook for altering how a command works. Functions are overridden by setting the function in question ignored, then writing a softcode alternative that is then executed and fetched appropriately.

  Commands:
  - wizhelp @admin
  - wizhelp access
  - wizhelp permissions
  - wizhelp @Hook
  - wizhelp hook setup

  Functions:
  - wizhelp @admin
  - wizhelp function_access

– wizhelp @function

– help @lfunction

– wizhelp bypass()

The Recycle Bin

- Rhost has a recycle bin that works a bit like a windows recycle bin. Whenever you destroy something within the mush, it is stacked onto the recycle bin and marked unavailable within the mush. This marks the dbref# as garbage in any sense of the word. However, the object is not able to be reused until purged. Once purged, it is put onto a free list that can then be reassigned to a new object. - wizhelp @nuke - wizhelp @destroy - wizhelp @toad - wizhelp @turtle - wizhelp @purge - wizhelp @recover - wizhelp @reclist

Percent Substitution Adding/Overriding

- Rhost allows the ability to both override percent substitutions as well as creating new ones. This is done with @Hook and admin params and issues softcode overriding. Due to how it is evaluated there is no risk of recursion. - wizhelp @hook - wizhelp hook_cmd - wizhelp sub_include - wizhelp sub_override

Hooking

- Hooking allows you to have advanced methods to manipulate commands including adding customized switches to them via softcode. - wizhelp @hook - wizhelp hook_cmd - wizhelp hook_obj - wizhelp hook setup

Command based uselocks

- This allows you to have unique uselocks per $command. This is done through the use of the USELOCK attribute flag, then you set up a matching attribute name with a prefix of a ~ to specify how the lock is to be evaluated. This works in the same manner as an evaluation lock. To be able to use the USELOCK attribute flag you must be empowered to do so with the 'ATRUSE' @toggle. You may also use the secure_atruselock config parameter to globally enable this and not require the toggle to be set. - wizhelp atruse toggle - help attribute uselocks

Differentating between command and listen locks

- We distinguish between commands and listens with uselocks by passing an optional argument to all locks that are uselocks. This optional argument is 0 for a default lock, 1 for a command lock and 2 for a listen lock. - help @lock type uselock

Wizard auto-overiding and how to disable it

- By default wizards override all locks, including attribute locks, can see all dark exits, and bypass pagelocks. This can be troublesome, and even abusive, so there's ways to disable this. - wizhelp @depower (for those abusing it) - wizhelp no_override (disable overiding locks) - wizhelp no_uselock (disable just uselock overriding) - wizhelp pagelock toggle (disable pagelock overriding)

Advanced FLAG and TOGGLE control

- Flags and toggles can be controlled to have multiple permissions and enable/disable targets of how the flags are allowed to be set. This is done through commands in-game or you can use conf file options to do so. - wizhelp @flagdef - wizhelp @toggledef ——— @admin @flagdef alternatives - wizhelp flag_access_set - wizhelp flag_access_unset - wizhelp flag_access_see - wizhelp flag_access_type ——– @admin @toggledef alternatives - wizhelp toggle_access_set - wizhelp toggle_access_unset - wizhelp toggle_access_see - wizhelp toggle_access_type

Advanced site control

- We allow advanced site control by not only blocking various sites but we can specify how many times a player can be connected at the same time as well as how many times sites are able to connect at the same time. This is done through normal site manipulation. - wizhelp forbid_host - wizhelp register_host - wizhelp noguest_host - wizhelp @list (site option)

Auto-Registration

- Autoregistration is the method that a player can auto-register by providing their email on the connect screen. It will email them a password and an optional document that the administrator provides. This is well described in the wizhelp. - wizhelp autoregistration

Which bit level is best?

- This is something that should be discussed by you and the staff of your game. As a good rule of thumb, only provide the bitlevel that is required to do the job. Too much power is always risky. In essence, each tier of bit can do everything the previous bitlevel can do, and then additional stuff on top of it. The highest bitlevel is #1 itself, being bitlevel 7. Then immortal, which should be considered the #1 character in most cases and is bitlevel 6. Then the royalty character, which is equal to wizard on penn, mux, or other codebases. For most things, this is the bitlevel you want to assign players. The exception will likely be game owners or people who control the master room code.

  There's a bunch of readme files and online wizhelp that goes into detail of the various bitlevels and what each can do. - XV. Multi-tiered bitlevel systems - wizhelp control

What are the limits for size/growth for RhostMUSH?

- While using QDBM, there's really no set limits for most things. The limits that we have are as followed: LBUF - 64K. It is recommended to only use 32K as there is some

     issues with networking with 64K lbufs.

  – Compile time option with the menu configurator

SBUF - 64 characters (if configured – it's suggested you do).

  – Compile time option with the menu configurator

MBUF - 200 characters. Not able to be changed.

MAX CONNECTIONS - Limited by the total number of open sockets

     and descriptors on the account and server running on. There are various tools to limit connection DoS attemps and other such nastiness. This is well documented in the netrhost.conf file.

  – wizhelp max_players

> – ~/game/netrhost.conf

MEMORY - no limit. Generally runs between 8-50M depending on the size of the mush and the LBUF size specified.

CPU - no limit, but has built in cpu abort in code. The

> netrhost.conf file documents this well for customizing. the default values are usually good enough.

> – wizhelp max_cpu_cycles

> – wizhelp cpuintervalchk

> – wizhelp cputimechk

> – wizhelp cpu_secure_lvl

> – wizhelp heavy_cpu_max

> – ~/game/netrhost.conf

DISK - no limit. Generally will be 75-200M depending on size, number of backups and if you leave your compiled object files in.

DB Size - (20000 default) There is no limit on the number of

> objects the db can have. By default it's soft limited to 20K objects, which can be changed by a netrhost.conf file change. We have had this up past 1.5 million objects, and other than a second or two of lag for complex searches we had no real problem.

> – wizhelp maximum_size

> – help @quota

> – wizhelp @quota

> – wizhelp @limit

Attribute Size - 10K as a hard limit. 750 as a soft limit.

> You can increase this but it can't exceed 10000 attributes. This is to avoid DoS style attacks.

> – wizhelp vlimit

> – wizhelp @limit

Sqlite and MySQL/Maria setup and why use it?

- Both of these can be configured separately or conjointly to run in parallel. This can be done through the RhostMUSH configuration utility. You generally want to use SQL for external data storage or accessing a central repository of data to share between multiple projects. Like, for example between a wiki, a forum, and the mush.

Executing outside scripts and binaries within RhostMUSH

- Rhost has execscript() which allows executing outside binaries or scripts as a native function. All effort has been done to avoid any type of DoS based issue or hang by doing this, however the guidelines presented should be followed before doing so. - wizhelp execscript - wizhelp power execscript - help sidefx - wizhelp writing scripts

Pulling external data into RhostMUSH

- You are capable of pulling external data in to RhostMUSH using several methods. These are by using:
    - SQL (mysql or sqlite)
    - execscript
    - cron (wizhelp signal)

Integrating a unix cron right into RhostMUSH

- The unix cron can be used to integrate with Rhost fairly easilly by use of signals. By using SIGUSR1 you can specify Rhost to execute code in-game, which part of that could be to pick up a pre-designed list of commands that the unix cron has set up. - wizhelp signal - wizhelp signal_cron

Signal handling, how it works, and when and why use it

- Signals are used to do different things for the mush. By default, the following signals are recognized by the mush and will do the following as defaults. - SIGUSR1 - will do a reboot of the mush. This is also customizable

    so that you can have it execute code in-mush if you want.
    - SIGUSR2 - will do a clean shutdown of the mush.
    - **SIGTERM - will immediately scram the mush as cleanly and fast** as possible. It will avoid dumping anything to the database to speed up scramming, but write a TERM flat file to be loaded in if corruption.

Setting up global parents, global @parents, global attribute formatting, and other global setups

- Global parents are useful when you want to have a global 'parent' without actually having a defined '@parent'. It always will be the highest tier in a lookup. The way lookups will go will be:

    self->@parent(s)->@zone(s)->GlobalParent

    The type of the parent does not have to match the target.

    These global parents can be defined either by using a global generic parent or by using the type. If a type is specified it overrides the generic. The following parameters are used: - global_parent_obj - The generic global parent (if defined) - global_parent_room - The room global parent - global_parent_exit - The exit global parent - global_parent_thing - The thing global parent - global_parent_player - The player global parent

- Global @parents are different than global parents in that any new item of similar type that is created is automatically assigned this physical @parent. It's obviously more limiting since it sets the literal physical parent defined.

    The type of the parent does not have to match the target.

The following parameters are used: - room_parent - The target that new rooms are @parented - exit_parent - The target that new exits are @parented - thing_parent - The target that new things are @parented - player_parent - The target that new players are @parented

- Global attribute formatting is a method define a wrapper, of sorts, where attributes like @desc, @odesc, @succ, and anything similar can be processed through this. All attributes will be either &FORMAT<attribute> or &<attribute>FORMAT based on the current configuration. Example: &FORMATDESC or &DESCFORMAT localy, or use the following global objects for global formatting. Local formatting has priority.

The type of the parent does not have to match the target.

  - room_attr_default - Target for room formatting

  - exit_attr_default - Target for exit formatting

  - thing_attr_default - Target for thing formatting

  - player_attr_default - Target for player formatting

RhostMUSH limitations and how to get around them

While Rhost is insanely configurable and quite powerful, there are limitations that exist within it.

- Function invocations. Sometimes you will hit a ceiling on evaluation. You may want to tweak values to allow more functions or commands to execute. The following controls that: - function_invocation_limit [25000 default] - specifies the total

  functions you can execute per command.

  - **function_recursion_limit [50] - specifies the total times a** function can call itself over and over. Rarely should this be increased and doing so can effect your stack depth.

- Command queue limits. Sometimes you want more to be queued up for players or wizards. - player_queue_limit - Max number of entries a player can queue - wizard_queue_limit - Max number of entries a wizard can queue

- @limit is a wonderful way to lock down limitations per player or global. Lots of power is available here. - @limit - vattr_limit_checkwiz - Enable @limit checks for wizards - wizmax_vattr_limit - Set wizard global VATTR limits - wizmax_dest_limit - Set wizard global @destroy limits - max_vattr_limit - Set player global VATTR limits - max_dest_limit - Set player global @destroy limits

- Lots of trace output can be cut off. You can modify this with: - trace_output_limit - Set lines of trace output shown

- To define how many commands a minute a player set SPAMMONITOR can use - spam_limit – default 120

- If you examine things and see 'Output cut off' messages, you may want to increase your output limit, funny enough, the name of this is similar - output_limit - You should set this no less than 4 times the current

  size of your LBUF.

- Attributes names can not exceed 64 characters. Sorry, it's a hard limit

- Sometime you may find a single may not work for an escape. You can in most cases use a % instead or double escape the to make it work. Also look at lit() as a solution.

Things other mushes can do that Rhost can not and how to emulate it

PennMUSH

- Attribute trees. These are emulated as a base set and can be duplicated enough to at least port code.

- lsearch() will have to be recoded to search()

- align() will have to be recoded to printf()

- Penn allows empty attributes. Rhost does not. Work will have to be done to take this into consideration.

- All *val() functions in Penn that are used will have to be remapped to a non-*val() function. It should be as simple as function_alias to the non-*val. Example:

    @admin function_alias=hasattrval hasattr

- Penn's hardcoded comsystem is emulated with the softcode comsys

- Penn's @mail system is workable with mail wrappers

- Pueblo is not supported.

- json is not supported.

- ssl is not natively supported (yet), see section XIV

- This uses @shutdown/restart, Rhost uses @reboot

MUX

- Mux has an async mysql database engine. This is not possible with Rhost. You'll have to use the sync method instead.

- UTF8 is supported but internally passed differently.

- Mux's hardcoded comsystem is emulated with the softcode comsys

- MUX's @mail system is workable with mail wrappers

- Pueblo is not supported.

- This uses @restart, Rhost uses @reboot

Advanced guest setup

- After you set up your guests, you can set unique names to each guest if you so want after defining the dbref#'s your guests use. This is done by defining them in the guest_namelist parameter. You can also increase guests (or decrease them) between 0-31 guests. - wizhelp guest_namelist - wizhelp num_guests

Attribute permission masking and the joys of the power behind it

- Attribute contentlocks can be set up so you can lock the actual content that you can set (or even unset!) into an attribute. The beauty of this is that you can specify case sensitive information, lock different ways contents in attributes are set based on who is setting it, or even on where it's being set. The sky's the limit. - global_attrdefault - Target for defining content locks

The amazing @cluster and what it can do for you

- Clusters is the way to virtually assign multiple objects into a single physical object. It essentially chains together two or more objects to share attributes between them, so that any attribute set on any object in that cluster can be set or fetched as if it was a singular entity. This allows some amazing ability to distribute attribute content or even have a farm of a massive amount of attributes without paying a hefty penalty on object bloat.

- help cluster – Gives a fantastic overview of how clusters work.

What we plan for the future

- Things to look forward to the future with RhostMUSH. - Full Unicode/UTF8 in Rhost 4.0 - A fully featured tag system in Rhost 4.0 - Built in Python API handler in Rhost 4.0 - Hopefully a built in Ruby and Perl API in Rhost 4.0/4.1 - Cross-Mush execution between mushes in Rhost 4.1 - More as we think about it :)

EXT: Additional features not covered otherwise Additional features - +/- 5.4 million years can be utilized with the built in time functions

which includes timefmt(), secs(), convtime(), convsecs(), and moon(). Party on!

- Changing permission levels in the middle of execution for evaluation. * see help on the streval and ueval function

- Full features in-game customization of near every aspect of the game.

1.1.24 Random notes and things to know about RhostMUSH

Here are some things to know about RhostMUSH and what you may or may not want to do. Things here are not covered in other documents:

Admin toggles to configure the WHO, various things you're used to, etc is in the 'netrhost.conf' file. descriptions Notes in the autoconf.h file is in the README.AUTOCONF file.

Note on bits, their levels, and things they do

IMMORTAL - They can do anything. Treat this as #1 and only give to people you trust. Period. You don't have to use this bit if you do not want to and just assume #1.

ROYALTY - Unlike PENN/MUX, this is *not* a sub-wizard, this is a FULL wizard. Plus, they can do a bit more.

COUNCILOR - Like royalty on PENN/MUX but they can modify.

ARCHITECT - Can't do as much as councilor, but lot more than BUILDER.

GUILDMASTER - Very limited. Sees dbrief#'s, can ex things their level and lower and @quota players.

You need to @pcreate your guest characters and set them GUEST

It doesn't create them on the fly but we considered this better. You have 31 total you can have. It defaults to 10 in the netrhost.conf file. You can rename the guests anything you want, but before you do so, you must add the dbref#'s to the param guest_namelist

@powers are INHERITED

Therefore, you need power_objects enabled (@admin) to make this work properly for non-plauyers. A power is taken before a bit level ONLY if higher than that bit. Yes, powers are multi-level.

@depowers are automatically checked first before anything else

This is also meaningless on objects.

Zones are unique

You can have things in multiple zones.

The db auto-repares itself when it can

It does this by purging anything it can't identify. Dataloss is better than unrecoverable data. Yes, any such 'repairing' is logged so you know if something is up.

You can get your connect.txt to parse ansi

See ansi_txtfiles in wizhelp. You can also override it with softcode if you so wanted. See file_object in wizhelp for more information on this.

Re-compiled binaries do not require an @shutdown

When re-compiling the binaries, all you have to remember is when done, issue @reboot on the game and @readcache.

You do not need to @shutdown.

Softcode emulations of functions from other servers are included

Load the file softfunctions into the mush once it's set up. This are @functions that will alias the functions that PENN, MUX, and TinyMUSH have that is either named differently or we don't have for one reason or another.

1.2 Comparison of modern MUSH servers

1.2.1 Differences to expect to the end user between PennMUSH, MUX, and Rhost-MUSH

The largest end user experience will mostly resolve around some look and feel. The general look and feel of how to set attributes, work with commands and functions, and getting around a grid will be identical between the mush flavors. @nuke and @destroy will work somewhat differently between the three codebases and some effort should be looked at on how different it behaves.

PennMUSH

- The way the comsystem (hardcode) works with the latest PennMUSH has some compatibility now with MUX's comsystem.

- The @mail system is different to MUX and Rhost.

- Debugging code uses DEBUG and has an indented format.

- The parser for code doesn't require nested escaping like other codebases, but has issues with the pre-parser and nesting.

- All standard movement, attribute setting, other should be similar

- Penn allows empty attributes.

- Penn supports attribute trees.

- Penn has the standard set of bitlevel flags with on/off @powers

MUX

- The comsystem (hardcode) is unique to MUX/TinyMUSH3 and is not compatible with Penn.

- The @mail system is unique to MUX/TinyMUSH3 and is not compatible with Penn.

- Debugging uses TRACE and is the old standard for debugging.

- The parser requires extra escaping for nested escaping but handles pre-parsing and nesting fine.

- MUX does not allow empty attributes.

- MUX does not support attribute trees.

- MUX has the standard set of bitlevel flags with on/off @powers

RhostMUSH

- The comsystem (softcode) is in the Mushcode directory and is compatible to both PennMUSH and MUX.

- The mail system is unique to Rhost but there exists mail wrappers that allow MUX and Penn compatibility.

- Debugging uses TRACE and is the old standard for debugging. It allows advanced features like labeling and grepping for content.

- The parser requires extra escaping for nested escaping but handles pre-parsing and nesting fine.

- Rhost does not allow empty attributes.

- Rhost marginally supports attribute trees.

- Rhost has a multi-level set of bitlevel flags with multi-tier @powers, @depowers, and varying other tools for permissions.

1.2.2 Comparison of features between RhostMUSH, PennMUSH, and MUX2

There are differences in the initial set up from Rhost to PennMUSH (and MUX2).

A lot of people use PennMUSH and if you are one of them, this may help you. Some people use MUX2, hopefully this will help you as well.

NOTE: If you plan to use sideeffects, you must set the SIDEFX flag to allow the target to use it

NOTE: Rhost does support UNICODE/UTF8, but it's currently not part of the main branch as of this writing. Please talk to Kage on the dev site for more information on when it'll be released.

1.2.3 Organization of help and wizhelp

First, on PennMUSH, help is separated into 'help' and 'wizhelp'. This can be confusing. If you want to 'combine' them, you may use the following snippit:

$ahelp*:@pemit %#=[switch([!!words(%0)][match(/search,%0*)],0?,[setq(0,help)][setq(1,0)],11,[setq(0,rest(%0))][setq(1,2)],setq(0,tri entry*),%qa[setq(2,%r)])][ifelse(!strmatch(%qb,No entry*),%q2%qb[setq(2,%r)])][ifelse(!$r(2),No topics found for '%q0'.)]

This will display help from help and wizhelp for any matching topic. It should make life easier for you. This also honors the /search switch.

1.2.4 Mail, comsystem, guests, master rooms, etc..

The comsystem is softcode and included in the readme directory. (comsys). Just load it in. The mail wrappers can be gotten from:

> The Mushcode directory in the Rhost Distribution.

Please see the other readme files on setting other things up like guests, master rooms, and so forth.

1.2.5 Comparisons of features

Comparisons were done based on the following: RhostMUSH 3.9.5p2 MUX 2.12.0.2 PennMUSH 1.8.6p0

1.2.6 @commands with equivalents

The following are used for compatibility to keep in mind:

@commands Pennmush——————-RhostMUSH—————————-MUX2 @@ @@ @@ @ALLHALT @halt/all @HALT/ALL @ALLQUOTA @quota/all @QUOTA/ALL @ALIAS @alias/@protect @ALIAS N/A @apply_marked @APPLY_MARKED @ASSERT @assert @ASSERT @ATRCHOWN @chown @CHOWN @ATRLOCK @lock @LOCK @ATTRIBUTE @attribute @ATTRIBUTE N/A (see backup_flat.sh) @BACKUP @BOOT @boot @BOOT @BREAK @break @BREAK N/A N/A @CCHARGE N/A N/A @CCHOWN @CEMIT (softcode) @CEMIT @CHANNEL N/A N/A @CHAT N/A N/A @CHOWNALL @chownall @CHOWNALL @CHZONE @zone @CHZONE @CHZONEALL @zone N/A @CLOCK N/A N/A @CLONE @clone @CLONE N/A N/A @CCREATE N/A N/A @CDESTROY N/A N/A @CWHO @COMMAND N/A N/A @CONFIG @admin @ADMIN N/A N/A @COFLAGS N/A N/A @CPFLAGS N/A N/A @CSET @CPATTR @cpattr @CPATTR @CREATE @create @CREATE N/A @cut @CUT @DBCK

@dbck @DBCK @DECOMPILE @decompile @DECOMPILE @DESTROY @destroy @DESTROY @DIG @dig @DIG @DISABLE @disable @DISABLE @DOING @doing @DOING @DOLIST @dolist @DOLIST @DRAIN @drain @DRAIN @DUMP @dump @DUMP @EDIT @edit @EDIT @ELOCK @lock/enter @LOCK/ENTER @EMIT @emit @EMIT N/A N/A @EMAIL @ENABLE @enable @ENABLE @ENTRANCES @entrances @ENTRANCES @EUNLOCK @unlock/enter @UNLOCK/ENTER N/A @eval @EVAL N/A @femit @FEMIT N/A @fpose @FPOSE N/A @fsay @FSAY @FIND @find @FIND @FIRS-TEXIT N/A N/A @FLAG @flag @FLAG @FORCE @force @FORCE N/A folder @FOLDER @FUNCTION @function/@lfunction @FUNCTION @GREP @grep N/A @HALT @halt @HALT @HIDE @hide N/A @HOOK @hook @HOOK @INCLUDE @include N/A N/A @skip/ifelse @IF @KICK @kick @KICK N/A @last @LAST @LEMIT @lemit @LEMIT @LINK @link @LINK @LIST @list @LIST N/A @list_file @LIST_FILE @LISTMOTD @listmotd @LISTMOTD @LOCK @lock @LOCK @LOG @log @LOG @LOGWIPE N/A N/A @LSET @set @SET N/A @mark @MARK N/A @mark_all @MARK_ALL @MAIL mail @MAIL @MALIAS wmail/alias @MALIAS @MAPSQL N/A N/A @MESSAGE @pemit/@remit + parsestr() N/A @MONIKER @extansi @MONIKER @MOTD @motd @MOTD @MVATTR @mvattr @MVATTR @NAME @name @NAME N/A @emit/noeval @NEMIT N/A @pemit/noeval @NPEMIT @NEWPASSWORD @newpassword @NEWPASSWORD @NOTIFY @notify @NOTIFY @NSCEMIT N/A N/A @NSEMIT @emit @emit @NSLEMIT @lemit @LEMIT @NSOEMIT @oemit @OEMIT @NSPEMIT @pemit @PEMIT @NSPROMPT N/A N/A @NSREMIT @remit @REMIT @NSZEMIT @zemit N/A @NUKE @destroy/@nuke @DESTROY/@NUKE @OEMIT @oemit @OEMIT @OPEN @open @OPEN @PARENT @parent @PARENT @PASSWORD @password @PASSWORD @PCREATE @pcreate @PCRE-ATE @PEMIT @pemit @PEMIT @POLL @doing/header @POLL @POOR @poor @POOR @POWER @power @POWER @PROMPT N/A (@program?) N/A (@program?) N/A @program @PROGRAM @PS @ps @PS @PURGE @timewarp/dump 1 @TIMEWARP/DUMP 1 N/A @quitprogram @QUITPRO-GRAM @QUOTA @quota @QUOTA N/A N/A @QUERY @READCACHE @readcache @READCACHE @RECYCLE @purge N/A N/A N/A @REFERENCE N/A @robot @ROBOT @REJECTMOTD @reject-motd @REJECTMOTD @REMIT @remit @REMIT @RESTART @reboot @RESTART @RETRY N/A N/A @RWALL @wall/wiz @WALL/WIZ @SCAN (see softcode) N/A @SEARCH @search @SEARCH @SELECT @switch/first @SWITCH/FIRST @SET @set @SET @SHUTDOWN @shutdown @SHUT-DOWN @SITELOCK @admin forbid_host/forbid_site @admin forbid_site @SLAVE N/A @STARTSLAVE @SOCKSET N/A N/A @SQL (only if MySQL enabled) @QUERY @SQUOTA @quota N/A @STATS @stats @STATS @SWEEP @sweep @SWEEP @SWITCH @switch @SWITCH N/A @timewarp @TIME-WARP @TELEPORT @teleport @TELEPORT N/A @timecheck @TIMECHECK N/A @toad @TOAD @TRIGGER @trigger @TRIGGER @ULOCK @lock/use @LOCK/USE @UNDESTROY @recover N/A @UNLINK @unlink @UNLINK @UNLOCK @unlock @UNLOCK @UNRECYCLE @recover N/A @UPTIME @uptime @UPTIME @UUNLOCK @unlock/use @UNLOCK/USE @VERB @verb @VERB @VERSION @version VERSION @WAIT @wait @WAIT @WALL @wall @WALL @WARNINGS N/A N/A @WCHECK N/A N/A @WEBPASSWD N/A N/A @WHEREIS @whereis N/A @WIPE @wipe @WIPE @WIZMOTD @wizmotd @WIZMOTD @WIZWALL @wall/wiz @WALL/WIZ @ZEMIT @zemit N/A N/A (softcode) ALLCOM N/A (softcode) COMLIST N/A (softcode) DELCOM N/A (softcode) ADDCOM N/A (softcode) COMTITLE ANEWS @dynhelp N/A ATTRIB_SET (@hook on S) (@hook on S) BRIEF ex/brief EX/BRIEF BUY N/A N/A N/A N/A CLEARCOM DESERT (see follow softcode) N/A DISMISS (see follow softcode) N/A DOING doing DOING DROP drop DROP EMPTY @tel/list lcon(target)=me @tel/list lcon(target)=me ENTER enter ENTER EXAMINE examine EXAMINE FOLLOW (see follow softcode) N/A GET get GET GIVE give GIVE GOTO goto GOTO HELP help/wizhelp HELP/WIZHELP HOME home HOME HUH_COMMAND @admin global_error_obj @admin global_error_obj INFO INFO INFO INVEN-TORY inventory INVENTORY KILL kill KILL LEAVE leave LEAVE LOGOUT logout LOGOUT LOOK look LOOK NEWS news NEWS N/A outputprefix OUTPUTPREFIX N/A outputsuffix OUTPUTSUFFIX PAGE page/lpage/rpage/mrpage PAGE POSE pose POSE N/A N/A PUEBLOCLIENT QUIT quit QUIT N/A N/A REPORT SAY say SAY SCORE score SCORE SEMIPOSE pose/nospace POSE/NOSPACE SESSION session SESSION SLAY slay SLAY TEACH train TRAIN THINK think THINK UNFOLLOW (see follow softcode) N/A UNIMPLEMENTED_COMMAND @admin global_error_obj @admin global_error_obj USE use USE WARN_ON_MISSING N/A N/A WHISPER whisper WHISPER WHO who WHO WITH N/A N/A

1.2.7 @commands unique to RhostMUSH

Commands that exist in Rhost that have no PennMUSH equivelant: @aflags @apply_marked @areg @blacklist @cluster @conncheck @convert @cut @dbclean @depower @dynhelp @eval @femit @fixdb @fpose @freeze @fsay @icmd @last @lfunction @limit @logrotate @mark @mark_all @money @pipe @program @progreset @protect @quitprogram @reclist @recover @register @remote @robot @rxlevel @skip @snapshot @snoop @thaw @timewarp @toad @toggle @toggledef @tor @turtle @txlevel @whereall grab join listen mrpage newsdb rpage smell taste touch wielded worn +players

1.2.8 @lock equivalents

@locks PennMUSH—————RhostMUSH——————————MUX2 BASIC BASIC/DEFAULT DEFAULT ENTER ENTER ENTER TELEPORT TPORT TPORT USE USE USE PAGE PAGE PAGE ZONE ZONEWIZLOCK/ZONETOLOCK/TWINKLOCK N/A PARENT PARENT PARENT LINK LINK LINK OPEN OPEN OPEN MAIL mail/lock MAIL USER USER USER USER:<dynamicname> lockencode()/lockdecode()/lockcheck() N/A SPEECH SPEECH SPEECH LISTEN USE (see listen argument) N/A COMMAND USE (commands are default) N/A LEAVE LEAVE LEAVE DROP DROP DROP DROPIN DROPTO N/A GIVE GIVE GIVE FROM GIVETO N/A PAY N/A N/A RECEIVE RECEIVE RECEIVE FOLLOW (See softcoded follow code) N/A EXAMINE See NO_MODIFY/NO_EXAMINE/TWINKLOCK N/A CHZONE ZONETOLOCK/ZONEWIZLOCK/TWINKLOCK N/A FORWARD N/A N/A FILTER N/A N/A INFILTER N/A N/A CONTROL CONTROL N/A DROPTO DROPTO N/A DESTROY See: @recover/@purge/INDESTRUCTIBLE/SAFE N/A INTERACT N/A (See: Reality Levels) N/A (See: Reality Levels) TAKE GETFROM GETFROM MAILFORWARD mail/lock, mail/autofor N/A N/A TELOUT TELOUT N/A DARK VISIBLE

1.2.9 @locks that only exist in RhostMUSH

@locks that exist in Rhost that have no PennMUSH equivelant: TELOUTLOCK TWINKLOCK DARKLOCK ALTNAME CHOWN

1.2.10 Flag and toggle equivalents

FLAGS Pennmush—————-RhostMUSH——————————MUX2 ABODE ABODE ABODE N/A N/A ASCII ANSI ANSI ANSI AUDIBLE AUDIBLE AUDIBLE (Not Needed) (Not Needed) BLEED N/A AUDITORIUM AUDITORIUM N/A BLIND BLIND N/A COMMANDS COMMANDS CHAN_USEFIRSTMATCH N/A N/A CHOWN_OK CHOWN_OK CHOWN_OK CLOUDY N/A N/A COLOR ANSICOLOR N/A CONNECTED CONNECTED CONNECTED DARK DARK DARK DEBUG TRACE TRACE DESTROY_OK DESTROY_OK DESTROY_OK ENTER_OK ENTER_OK ENTER_OK FIXED NO_TEL FIXED FLOATING FLOATING FLOATING GAGGED FUBAR GAGGED GOING GOING GOING HALT HALT HALT HAVEN HAVEN HAVEN (see @flag) (marker0-marker9) HEAD HEAR_CONNECT MONITOR (@toggle) SITECON HEAVY NO_TEL/@lock-teleport N/A N/A N/A HTML N/A FREE IMMORTAL N/A INHERIT INHERIT JUMP_OK JUMP_OK JUMP_OK KEEPALIVE KEEPALIVE (@toggle) KEEPALIVE N/A KEY KEY LIGHT LIGHT LIGHT LINK_OK LINK_OK LINK_OK LISTEN_PARENT (@admin listen_parents) N/A LOUD NO_OVERRIDE/NO_USELOCK N/A (see @flag) MARKER0-MARKER9 MARKER0-MARKER9 MISTRUST GUILDOBJ/NO_GOBJ/BACKSTAGE/NOBACKSTAGE N/A MONIKER EXTANSI (@toggle) N/A MONITOR MONITOR MONITOR MYOPIC MYOPIC MYOPIC NOACCENTS ACCENTS (@toggle) ACCENTS (Not Needed) (Not Needed) NO_BLEED NOSPOOF NOSPOOF NOSPOOF (See @ns-commands) Auto-Enabled for Wiz+ SPOOF NO_COMMAND NO_COMMAND NO_COMMAND NO_LEAVE @icmd leave/@lock-leave @icmd leave/@lock-leave NO_TEL NO_TEL N/A ON-VACATION MARKER0-MARKER9 VACATION OPAQUE OPAQUE OPAQUE OPEN_OK @lock-openfrom OPEN_OK

ORPHAN NOGLOBPARENT (@toggle) N/A N/A PARENT_OK PARENT_OK PUPPET PUPPET PUP-
PET QUIET QUIET QUIET N/A ROBOT ROBOT ROYALTY GUILDMASTER/ARCHITECT/COUNCILOR
ROYALTY (@see @flag) MARKER0-9 STAFF SAFE SAFE SAFE N/A SLAVE SLAVE N/A MONI-
TOR (@toggle) SITEMON STICKY STICKY STICKY N/A SUSPECT SUSPECT TERSE TERSE TERSE
TRANSPARENT TRANSPARENT TRANSPARENT UNFINDABLE UNFINDABLE UNFINDABLE N/A
N/A UNICODE (See @flag) WANDERER UNINSPECTED VERBOSE VERBOSE VERBOSE VISUAL VI-
SUAL VISUAL WIZARD WIZARD/IMMORTAL WIZARD XTERM256 XTERMCOLOR COLOR256

1.2.11 Flags and toggles that only exist in RhostMUSH

Flags

ALTQUOTA ANONYMOUS ARCHITECT AUDITORIUM BLIND BOUNCE CLOAK COUNCILOR FUBAR
GUILDMASTER GUILDOBJ IMMORTAL INDESTRUCTABLE NO_ANSINAME NO_BACKSTAGE NO_CODE
NO_CONNECT NO_EXAMINE NO_FLASH NO_GOBJ NO_MODIFY NO_MOVE NO_NAME NO_OVERRIDE
NO_PESTER NO_POSSESS NO_STOP NO_UNDERLINE NO_USELOCK NO_WALLS NO_YELL PRIVATE
ROBOT SCLOAK SEE_OEMIT SHOWFAILCMD SIDEFX SPAMMONITOR SPOOF STOP WANDERER
ZONECONTENTS ZONEPARENT

Toggles

ATRUSE CHKREALITY CPUTIME EXFULLWIZATTR FORCEHALTED HIDEIDLE IGNOREZONE
IMMPROG LOGROOM MAILVALIDATE MAIL_LOCKDOWN MAIL_NOPARSE MAIL_STRIPRETURN
MONITOR_AREG MONITOR_BAD MONITOR_CONN MONITOR_CPU MONITOR_DISREASON MONI-
TOR_FAIL MONITOR_SITE MONITOR_STATS MONITOR_TIME MONITOR_USERID MONITOR_VLIMIT
MORTALREALITY NODEFAULT NOSHPROG NOZONEPARENT NO_ANSI_EX NO_ANSI_EXIT
NO_ANSI_PLAYER NO_ANSI_ROOM NO_ANSI_THING NO_FORMAT NO_TIMESTAMP PAGELOCK
PROG PROG_ON_CONNECT SAFELOG SEE_SUSPECT SILENTEFFECT SNUFFDARK ZONECMDCHK
ZONE_AUTOADD ZONE_AUTOADDALL

1.2.12 @power equivalents

@powers Pennmush—————-RhostMUSH————————————MUX2 Announce FREE_WALL
Announce Boot BOOT Boot Builder @quota !WANDERER (flag) Builder CAN_DARK @admin
player_dark/@depower dark N/A Can_spoof N/A - Wizard+ auto-spoof N/A Cemit N/A N/A N/A
CHOWN_OTHER chown_anything N/A @lock/twink control_all N/A WIZ_WHO expanded_who Chat_Privs
N/A comm_all DEBIT STEAL Steal_money Functions (See @lfunctions) Wizard+ only Guest GUEST
(flag) Guest HOOK Wizard+ only Wizard+ only Halt HALT_QUEUE/HALT_QUEUE_ALL Halt Hide
NOWHO Hide Idle @timeout player to -1 Idle N/A NO_MODIFY (flag) Immutable Link_Anywhere
N/A (security risk) N/A Login LOGIN (flag) LOGIN (flag) Long_Fingers LONG_FINGERS Long_fingers
MANY_ATTRIBS (@admin vlimit) N/A N/A MONITOR (@toggle) Monitor No_Pay FREE (flag)
Free_money No_Quota FREE_QUOTA Free_quota Open_Anywhere N/A (security risk) N/A N/A
(Wiz+ Automatic) Pass_locks PICK_DBREFS Wizard+ only N/A PUEBLO_SEND N/A N/A Pemit_All
LONG_FINGERS N/A Player_Create PCREATE N/A Poll N/A – Softcode @doing/header Poll N/A
PROG (@toggle) Prog Queue SEE_QUEUE/SEE_QUEUE_ALL/HALT_QUEUE/HALT_QUEUE_ALL N/A
Quotas CHANGE_QUOTAS N/A SQL_OK N/A N/A Search SEARCH_ANY Search See_All EX-
AMINE_FULL See_all N/A WHO_UNFIND See_hidden N/A SHUTDOWN Siteadmin See_Queue
SEE_QUEUE/SEE_QUEUE_ALL N/A N/A STAT_ANY Stat_any Tport_Anything TEL_ANYTHING
Tel_anything Tport_Anywhere TEL_ANYWHERE Tel_anywhere Unkillable NOKILL Unkillable

@power unique to RhostMUSH

Depowers are unique in Rhost and PennMUSH has no equivelant.

Powers that exist in RhostMUSH that have no match in PennMUSH: CHOWN_ME WIZ_WHO NO-FORCE FREE_QUOTA JOIN_PLAYER NO_BOOT STAT_ANY WHO_UNFIND SHUTDOWN PURGE CHOWN_ANYWHERE CHOWN_OTHER GRAB_PLAYER SECURITY WRAITH HIDEBIT

1.2.13 Functions equivalents

Functions Pennmush——————-RhostMUSH——————MUX @@ @@ @@ ABS ABS ABS/IABS ACCENT ACCENT ACCENT ACCNAME CNAME MONIKER ACOS ACOS ACOS ADD ADD ADD AFTER AFTER AFTER ALIAS get(#db/alias)/LISTPROTECT get(#db/alias) ALIGN PRINTF N/A ALLOF OFPARSE N/A ALPHAMAX ALPHAMAX ALPHAMAX ALPHAMIN ALPHAMIN ALPHAMIN AND AND AND/ANDBOOL ANDFLAGS ANDFLAGS ANDFLAGS ANDLFLAGS ANDFLAG N/A ANDLPOWERS @function (softfunctions) N/A ANSI ANSI ANSI APOSS APOSS APOSS ART ART ART ASIN ASIN ASIN ATAN ATAN ATAN ATAN2 ATAN2 ATAN2 N/A ATTRCNT ATTRCNT ATRLOCK HASFLAG(#obj/attr,LOCK) HASFLAG(#obj/attr,LOCK) ATTRIB_SET SET SET BAND MASK BAND BASECONV PACK/UNPACK BASECONV BEEP BEEP BEEP BEFORE BEFORE BEFORE N/A BITTYPE BITTYPE BENCHMARK CPUTIME (@toggle) N/A BNAND MASK BNAND BNOT MASK N/A BOR BOR BOR BOUND BOUND/FBOUND N/A BRACKETS BRACKETS N/A BXOR MASK BXOR CAND CAND CAND/CANDBOOL CAPSTR CAPSTR CAPSTR CASE CASE CASE CASEALL CASEALL N/A CAT CAT CAT CBUFFER N/A N/A CBUFFERADD N/A N/A CDESC N/A N/A CEIL CEIL CEIL CEMIT N/A CEMIT CENTER CENTER CENTER CFLAGS N/A N/A CHANNELS N/A CHANNELS CHECKPASS CHECKPASS N/A CHILDREN CHILDREN CHILDREN N/A N/A CHOOSE CHR CHR CHR CLFLAGS N/A N/A CLOCK N/A N/A CLONE CLONE N/A CMDS CMDS CMDS CMOGRIFIER N/A N/A CMSGS N/A N/A COLORS COLORS N/A N/A N/A COLORDEPTH N/A @function (softfunctions) COLUMNNS N/A N/A COMALIAS COMP COMP COMP N/A N/A COMTITLE CON CON CON COND @function (softfunctions) N/A CONDALL @function (softfunctions) N/A CONFIG CONFIG CONFIG CONN CONN CONN convsecs(get(#db/last)) convsecs(get(#db/last)) CONNLAST N/A N/A CONNLEFT N/A N/A CONNMAX N/A N/A CONNNUM N/A N/A CONNRECORD N/A N/A CONNTOTAL CONTROLS CONTROLS CONTROLS CONVSECS CONVSECS CONVSECS CONVTIME CONVTIME CONVTIME CONVUTCSECS CONVSECS CONVSECS CONVUTCTIME CONVTIME CONVTIME COR COR COR/CORBOOL COS COS COS ALIGN PRINTF CPAD N/A CRC32 CRC32 COWNER N/A N/A CREATE CREATE CREATE CRECALL N/A N/A CSECS N/A N/A CSTATUS N/A N/A CTIME N/A CTIME CTITLE N/A N/A CTU CTU CTU CUSERS N/A N/A CWHO N/A CWHO DEC DEC/XDEC DEC DECODE64 DECODE64 N/A DECOMPOSE TRANSLATE TRANSLATE DECRYPT DECRYPT DECRYPT DEFAULT DEFAULT DEFAULT N/A DESTROY DESTROY DIE DICE DIE DIG DIG CREATE(with 'r') DIGEST DIGEST DIGEST N/A TIMEFMT DIGITTIME DIST2D DIST2D DIST2D DIST3D DIST3D DIST3D @function @function DISTRIBUTE DIV DIV IDIV DOING DOING DOING N/A N/A DUMPING E E E EDEFAULT EDEFAULT EDEFAULT EDIT PEDIT/EDIT EDIT ELEMENT MATCH MATCH ELEMENTS ELEMENTSMUX/ELEMENTS ELEMENTS ELIST ELIST ITEMIZE ELOCK ELOCK ELOCK EMIT EMIT EMIT ENCODE64 ENCODE64 N/A ENCRYPT ENCRYPT ENCRYPT ENDTAG N/A N/A ENTRANCES ENTRANCES ENTRANCES EQ EQ EQ N/A ERROR ERROR ESCAPE ESCAPE ESCAPE ETIME @function (softfunctions) N/A ETIMEFMT TIMEFMT ETIMEFMT EVAL EVAL EVAL EXIT EXIT EXIT N/A EXP EXP EXTRACT EXTRACT EXTRACT %+ %+ FCOUNT %+ %+ FDEPTH FDIV FDIV FDIV FILTER FILTER FILTER FILTERBOOL FILTER FILTERBOOL FINDABLE FINDABLE FINDABLE FIRST FIRST FIRST FIRSTOF OFPARSE N/A FLAGS FLAGS FLAGS FLIP REVERSE REVERSE FLOOR FLOOR FLOOR FLOORDIV FLOORDIV FLOORDIV FMOD FMOD FMOD FN BYPASS N/A FOLD FOLD FOLD FOLDERSTATS FOLDERLIST N/A FOLLOWERS N/A (softcode available) N/A FOLLOWING N/A (softcode available) N/A FOREACH FOREACH FOREACH FRACTION N/A N/A FULLALIAS ALIAS + LISTPROTECT N/A FULLNAME FULLNAME FULLNAME FUNCTIONS LISTFUNCTIONS N/A GET GET GET GETPIDS PIDS N/A GET_EVAL GET_EVAL GET_EVAL GRAB GRAB GRAB GRABALL GRABALL GRABALL GREP GREP GREP GREPI GREP GREPI GT GT GT GTE GTE GTE HASATTR HASATTR HASATTR

HASATTRP HASATTRP HASATTRP HASATTRPVAL HASATTRP HASATTRP HASATTRVAL HASATTR HASATTR HASFLAG HASFLAG HASFLAG HASPOWER HASPOWER HASPOWER N/A HASQUOTA HASQUOTA HASTYPE HASTYPE HASTYPE HEIGHT @function (softfunctions) HEIGHT HIDDEN HIDDEN N/A HOME HOME HOME HOST LOOKUP_SITE HOST HTML N/A N/A IBREAK IBREAK N/A IDLE IDLE IDLE IF IFELSE IF IFELSE IFELSE IFELSE ILEV ILEV ILEV INAME NAME NAME INC INC/XINC INC INDEX INDEX INDEX INUM INUM/INUM2 INUM N/A INZONE INZONE IPADDR LOOKUP_SITE N/A ISDAYLIGHT TIMEFMT N/A ISDBREF ISDBREF ISDBREF ISINT ISINT ISINT ISNUM ISNUM ISNUM N/A N/A ISRAT ISOBJID N/A N/A ISREGEXP N/A N/A ISWORD ISWORD ISWORD ITEMIZE ELIST ITEMIZE ITEMS WORDS WORDS ITER ITER ITER ITEXT ITEXT ITEXT LALIGN PRINTF N/A STRMATH LADD LADD N/A LAND LAND LAST LAST LAST N/A LASTCREATE LASTCREATE LATTR LATTR LATTR N/A LATTR LATTRCMDS LATTRP LATTRP LATTRP N/A LCMDS LCMDS LCON LCON LCON LCSTR LCSTR LCSTR LDELETE LDELETE LDELETE LEFT LEFT STRTRUNC LEMIT LEMIT N/A LETQ @function (softfunctions) N/A LEXITS LEXITS LEXITS LFLAGS LFLAGS LFLAGS LINK LINK LINK N/A LIST (like iter()) LIST (like iter()) LINSERT INSERT INSERT LIST LISTPOWERS, FLAGS, etc N/A LISTQ N/A N/A LIT LIT LIT LJUST LJUST LJUST LLOCKFLAGS N/A N/A LLOCKS LOCKS LOCKS LMATH STRFUNC N/A LN LN LN LNUM LNUM/LNUM2 LNUM LOC LOC LOC LOCALIZE LOCALIZE LOCALIZE LOCATE LOCATE LOCATE LOCK LOCK LOCK N/A LOG2FILE LOG LOCKFILTER LOCKCHECK N/A LOCKFLAGS FLAGS FLAGS LOCKOWNER OWNER OWNER LOCKS LOCK LOCK LOG LOG LOG LPARENT PARENTS LPARENT LPIDS PIDS N/A LPLAYERS LCON LCON N/A LOR LOR LPORTS PORT PORTS ALIGN PRINTF LPAD LPOS LPOS LPOS DIE DICE LRAND N/A LROOMS LROOMS LREPLACE REPLACE REPLACE LSEARCH SEARCH/SEARCHNG SEARCH LSEARCHR revwords(search()) revwords(search()) LSET SET SET LSTATS STATS STATS LT LT LT LTE LTE LTE LTHINGS LCON LCON LVCON LCON + STREVAL at mortal N/A LVEXITS LCON + STREVAL at mortal N/A LVPLAYERS LCON + STREVAL at mortal N/A LVTHINGS LCON + STREVAL at mortal N/A LWHO LWHO LWHO LWHOID N/A N/A MAIL MAILREAD/MAILSEND MAIL MAILDSTATS MAILSIZE/MAILQUOTA MAILSIZE MAILFROM MAILREAD MAILFROM MAILFSTATS FOLDERLIST/FOLDERCURRENT N/A MAILLIST MAILREAD N/A MAILSEND MAILSEND N/A MAILSTATS MAILSIZE/MAILQUOTA MAILSIZE MAILSTATUS MAILSIZE/MAILQUOTA MAILSIZE MAILSUBJECT MAILREAD MAILSUBJ MAILTIME MAILREAD N/A MALIAS MAILREAD N/A MAP MAP MAP MAPSQL N/A N/A MATCH MATCH MATCH MATCHALL MATCHALL MATCHALL MAX MAX MAX MEAN AVG AVG MEDIAN AVG AVG MEMBER MEMBER MEMBER MEMBER MERGE MERGE MERGE MESSAGE PARSESTR + PEMIT/REMIT N/A MID MID MID MIN MIN MIN MIX MIX MIX MODULO MOD MOD MONEY MONEY MONEY MONIKER CNAME MONIKER N/A N/A MOTD MSECS MODIFYTIME + CONVTIME MTIME + CONVTIME MTIME MODIFYTIME MTIME MUDNAME MUDNAME MUDNAME MUDURL N/A N/A MUL MUL MUL MUNGE MUNGE MUNGE MWHO LWHO + STREVAL at mortal N/A MWHOID N/A N/A NAME NAME NAME NAMEGRAB @function (softfunctions) N/A NAMEGRABALL @function (softfunctions) N/A NAMELIST @function (softfunctions) N/A NAND NAND N/A NATTR ATTRCNT ATTRCNT NATTRP ATTRCNT ATTRCNT NCAND !CAND NOT(CAND()) NCHILDREN CHILDREN CHILDREN NCON WORDS + LCON WORDS + LCON NCOND @function (softfunctions) N/A NCONDALL @function (softfunctions) N/A NCOR !COR NOT(COR()) NEARBY NEARBY NEARBY NEQ NEQ NEQ NEXITS WORDS + LEXITS WORDS + LEXITS NEXT NEXT NEXT NEXTDBREF N/A N/A NLSEARCH WORDS + SEARCH WORDS + SEARCH NMWHO WORDS+LWHO+STREVAL at mort N/A NOR NOR N/A NOT NOT or ! NOT NPLAYERS WORDS + LCON WORDS + LCON NSCEMIT N/A N/A NSEARCH WORDS + SEARCH WORDS + SEARCH NSEMIT EMIT EMIT NSLEMIT LEMIT N/A NSOEMIT OEMIT N/A NSPEMIT PEMIT N/A NSPROMPT N/A (@program?) N/A (@program?) NSREMIT REMIT N/A NSZEMIT ZEMIT N/A NTHINGS WORDS + LCON WORDS + LCON NULL NULL NULL NUM NUM NUM NUMVERSION N/A N/A NVCON WORDS+LCON+STREVAL at mort N/A NVEXITS WORDS+LEXITS+STREVAL at mo N/A NVPLAYERS WORDS+LCON+STREVAL at mort N/A NVTHINGS WORDS+LCON+STREVAL at mort N/A NWHO WORDS + LWHO WORDS + LWHO OBJ OBJ OBJ OBJEVAL OBJEVAL OBJEVAL OBJID N/A N/A OBJMEM SIZE OBJMEM OEMIT OEMIT OEMIT OPEN OPEN N/A OR OR OR/ORBOOL ORD ASC ORD ORDINAL N/A N/A ORFLAGS ORFLAGS ORFLAGS ORLFLAGS ORFLAG N/A ORLPOWERS N/A (easy to @function) N/A OWNER OWNER OWNER PARENT PARENT PARENT PCREATE CREATE CREATE PEMIT PEMIT PEMIT PFUN U + PARENT U + PARENT PI PI PI

PIDINFO PID N/A PLAYER before(grab(lwho(1),*:%0),:) N/A PLAYERMEM SIZE PLAYMEM PMATCH PMATCH PMATCH POLL DOING POLL PORTS PORT PORTS POS POS POS POSS POSS POSS POWER POWER POWER POWERS LPOWERS POWERS PROMPT N/A (@program?) N/A (@program?) PUEBLO N/A N/A QUOTA QUOTA N/A R R R RAND RAND RAND RANDWORD PICKRAND PICKRAND RECV CHARIN N/A REGEDIT REGEDIT N/A REGEDITALL REGEDITALL N/A REGEDITALLI REGEDITALLI N/A REGEDITI REGEDITI N/A REGISTERS N/A N/A REGLATTR LATTR N/A REGLATTRP LATTRP N/A REGLMATCH REGLMATCH N/A REGLMATCHALL REGLMATCHALL N/A REGLMATCHALLI REGLMATCHALLI N/A REGLMATCHI REGLMATCHI N/A REGMATCH REGMATCH REGMATCH REGMATCHI REGMATCHI REGMATCHI REGNATTR WORDS + ATTR N/A REGNATTRP WORDS + ATTRP N/A REGRAB REGRAB REGRAB REGRABALL REGRABALL REGRABALL REGRABALLI REGRABALLI REGRABALLI REGRABI REGRABI REGRABI REGREP REGREP N/A REGREPI RE-GREPI N/A REGXATTR ATTR N/A REGXATTRP ATTRP N/A REMAINDER REMAINDER REMAINDER REMIT REMIT REMIT REMOVE REMOVE REMOVE RENDER N/A N/A REPEAT REPEAT RE-PEAT REST REST REST RESTARTS N/A RESTARTS RESTARTTIME REBOOTTIME RESTARTTIME CONVTIME(RESTARTTIME)) CONVTIME(REBOOTTIME()) RESTARTSECS RESWITCH RESWITCH N/A RESWITCHALL RESWITCHALL N/A RESWITCHALLI RESWITCHALLI N/A RESWITCHI RESWITCHI N/A REVWORDS REVWORDS REVWORDS RIGHT RIGHT RIGHT RJUST RJUST RJUST RLOC RLOC RLOC N/A ROMAN ROMAN RNUM RNUM N/A ROOM ROOM ROOM ROOT N/A N/A ROUND ROUND ROUND ALIGN PRINTF RPAD S S S SCAN N/A N/A SCRAMBLE SCRAMBLE SCRAMBLE SECS SECS SECS SECURE SECURE/SECUREX SECURE SENT CHAROUT N/A SET SET SET SETDIFF SETDIFF SETDIFF SETINTER SETINTER SETINTER SETQ SETQ SETQ SETR SETR SETR SETUNION SETUNION SETUNION SHA0 DIGEST DIGEST DIGEST DIGEST SHA1 SHL SHL SHL SHR SHR SHR SHUFFLE SHUFFLE SHUFFLE SIGN NCOMP(%0,0) SIGN SIN SIN SIN SLEV N/A N/A @function @function SITEINFO SORT SORT SORT SORTBY SORTBY SORTBY SORTKEY @function (softfunctions) N/A SOUNDEX SOUNDEX N/A SOUNDSLIKE SOUNDXLIKE N/A SPACE SPACE SPACE SPEAK PARSESTR N/A SPEAKPENN PARSESTR N/A SPELLNUM SPELLNUM SPELLNUM SPLICE SPLICE SPLICE SQL (if MYSQL enabled) N/A (ASYNC db) SQLESCAPE (if MYSQL enabled) N/A (ASYNC db) SQRT SQRT SQRT SQUISH SQUISH SQUISH SSL N/A N/A STARTTIME START-TIME STARTTIME CONVTIME(STARTTIME)) CONVTIME(STARTTIME()) STARTSECS N/A STATS STATS STDDEV AVG AVG STEP STEP STEP STEXT N/A N/A STRALLOF OFPARSE N/A STRCAT STRCAT STRCAT N/A STRIP STRIP STRDELETE CREPLACE/DELETE DELETE STRFIRSTOF OF-PARSE N/A STRINGSECS @function (softfunctions) N/A STRINSERT CREPLACE N/A STRIPACCENTS STRIPACCENTS STRIPACCENTS STRIPANSI STRIPANSI STRIPANSI STRLEN STRLEN STRLEN STR-MATCH STRMATCH STRMATCH N/A STRLENRAW STRMEM STRREPLACE CREPLACE/REPLACE REPLACE SUB SUB SUB N/A ESCAPEX SUBEVAL SUBJ SUBJ SUBJ N/A N/A SUCCESSES SWITCH SWITCH SWITCH SWITCHALL SWITCHALL N/A T T T TABLE @function (softfunctions) TABLE TAG N/A N/A TAGWRAP N/A N/A TAN TAN TAN TEL TEL TEL TERMINFO N/A TERMINFO TESTLOCK LOCKCHECK N/A TEXTENTRIES WORDS + TEXTFILE WORDS + TEXTFILE TEXTFILE TEXTFILE TEXTFILE TIME TIME TIME TIMEFMT PTIMEFMT TIMEFMT TIMESTRING SINGLETIME/TIMEFMT SINGLETIME TR TR TR TRIM TRIM TRIM TRIMPENN TRIM TRIM TRIMTINY TRIM TRIM N/A N/A TRIGGER TRUNC TRUNC TRUNC TYPE TYPE TYPE UCSTR UCSTR UCSTR UDEFAULT UDEFAULT UDEFAULT UFUN U U ULAMBDA U + #lambda N/A ULDEFAULT ULDEFAULT N/A ULOCAL ULOCAL ULOCAL UNIQUE LISTDIFF/LISTUNION/LISTINTER N/A UNSETQ N/A N/A UPTIME N/A N/A UTC-TIME TIME TIME V V V VADD VADD VADD VALID VALID VALID VCROSS VCROSS VCROSS VDIM VDIM VDIM VDOT VDOT VDOT VERSION VERSION VERSION VISIBLE VISIBLE VISIBLE VMAG VMAG VMAG VMAX SORTLIST N/A VMIN SORTLIST N/A VMUL VMUL VMUL VSUB VSUB VSUB VUNIT VUNIT VUNIT WHERE WHERE WHERE WIDTH @function (softfunctions) WIDTH WILDGREP GREP N/A WILDGREPI GREPI N/A WIPE WIPE WIPE WORDPOS WORDPOS WORDPOS WORDS WORDS/MWORDS WORDS WRAP WRAP WRAP N/A MODIFYTIME WRITETIME XATTR ATTR N/A XATTRP ATTRP N/A XCON XCON N/A XEXITS LEXITS + EXTRACT N/A XGET XGET XGET XMWHO LWHO+EXTRACT+STREVAL at mor N/A XMWHOID N/A N/A XOR XOR XOR XPLAYERS XCON N/A XTHINGS XCON N/A XVCON XCON + STREVAL at mortal N/A XVEXITS LEXITS + STREVAL at mor-tal N/A XVPLAYERS XCON + STREVAL at mortal N/A XVTHINGS XCON + STREVAL at mortal N/A XWHO LWHO + EXTRACT LWHO + EXTRACT XWHOID N/A N/A ZEMIT ZEMIT N/A ZFUN ZFUN

ZFUN ZMWHO ZWHO + STREVAL at mortal N/A ZONE LZONE ZONE ZWHO ZWHO ZWHO

Functions that only exist in RhostMUSH

Functions that exist in Rhost that do not have a match in PennMUSH: AIINDEX AINDEX ANDCHR ARRAY ATTRCNT BETWEEN BITTYPE CANSEE CAPLIST CHKGARBAGE CHKREALITY CHKTRACE CHOMP CITER CLOAK CLUSTER_ADD CLUSTER_ATTRCNT CLUSTER_DEFAULT CLUSTER_EDEFAULT CLUSTER_FLAGS CLUSTER_GET CLUSTER_GET_EVAL CLUSTER_GREP CLUSTER_HASATTR CLUSTER_HASFLAG CLUSTER_LATTR CLUSTER_REGREP CLUSTER_REGREPI CLUSTER_SET CLUSTER_STATS CLUSTER_U CLUSTER_U2 CLUSTER_U2DEFAULT CLUSTER_U2LDEFAULT CLUS-TER_U2LOCAL CLUSTER_UDEFAULT CLUSTER_UEVAL CLUSTER_ULDEFAULT CLUSTER_ULOCAL CLUSTER_VATTRCNT CLUSTER_WIPE CLUSTER_XGET COLUMNS COSH COUNTSPECIAL CRC32 DELEXTRACT DESTROY EDITANSI EE ERROR EXP FBETWEEN FBOUND GARBLE GLOBALROOM GUILD HASDEPOWER HASQUOTA HASRXLEVEL HASTOGGLE HASTXLEVEL INPROGRAM INZONE ISALNUM ISALPHA ISCLUSTER ISDIGIT ISHIDDEN ISLOWER ISPUNCT ISSPACE ISUPPER ISXDIGIT KEEPFLAGS KEEPTYPE LAND LAVG LCMDS LDEPOWERS LISTMATCH LISTNEWSGROUPS LISTR-LEVELS LISTTOGGLES LLOC LMAX LMIN LMUL LNOR LOCALFUNC LOCKDECODE LOCKENCODE LOGSTATUS LOGTOFILE LOR LRAND LROOMS LTOGGLES LXNOR LXOR MONEYNAME MOON MOVE NAMEQ NOSTR NOTCHR NSLOOKUP ORCHR PARENMATCH PFIND PGREP POWER10 PRIVA-TIZE PROGRAMMER PUSHREGS RACE RANDMATCH RANDPOS REGEDITALLILIT REGEDITALLLIT REGEDITILIT REGEDITLIT REGNUMMATCH REGNUMMATCHI REMFLAGS REMTYPE ROMAN ROTL ROTR RSET RXLEVEL SAFEBUFF SEES SETQMATCH SHIFT SINH SORTLISAT STR STRDISTANCE STREQ STREVAL STRFUNC STRIP STRLENRAW STRLENVIS STRMATH SUBNETMATCH TANH TOGGLE TOTCMDS TRACE TXLEVEL UEVAL WHILE WILDMATCH WRAPCOLUMNS WRITABLE XNOR XORCHR XORFLAG ZFUNDEFAULT ZFUNEVAL ZFUNLDEFAULT ZFUNLOCAL

1.2.14 What may need to be modified to get softcode from PennMUSH, TinyMUSH2, TinyMUSH3, or MUX2 to work on Rhost

RhostMUSH, for the most part, will work out of the box with most softcode gotten from other codebases. There are, however, exceptions. Most of these exceptions will be minor code differences between how ANSI is processed, the varences of arguments or switches to commands or functions, or required flags.

Most changes will revolve around the ones listed in this document.

Problematic functions between codebases

lsearch()/search(), align()/printf(), *attrval()

Problematic features between codebases

named variables for regexp patterns in $commands are not supported. @aliases on non-players are not supported. Frankly I find them redundant.

Problematic commands

@mapsql, hardcoded required comssytem commands (some are redundant)

SIDEFX flag

Anything that uses sideeffects –DIRECTLY– requires this flag. Sideeffects are like set(), pemit(), and so forth. list(), while a side-effect, does not require this flag as it is considered passive and safe.

Variable exits

Rhost handles them slightly different. You do not link exits to #-4. That's an invalid destination. I always found it, frankly, stupid to save any data in the database that was literally invalid. So, you link the exit as you normally would, then @toggle the exit variable. At that point you use @exitto like you would any other codebase.

Zones

Zones actually can work near exactly as you would expect them to work on TinyMUSH, MUX, or Penn. Either at once or at different times. We recognize multiple zones, zone masters, zone inheritance, zone parenting, zone command processing, and the ability to bypass zones entirely. There's a ton of flexbility with this. However, the syntax for adding/removing zones is different so the commands will have to be ported to Rhost.

@powers

Powers work a bit differently in Rhost and they're named differently, which should not be that big a surprise as they're different between all the codebases anyway. The big difference is our powers are tiered, meaning the can be limited or grown to a given bitlevel and are not just toggle powers like the other codebases. We also have @depower that is the anti-thesis of @power

Attribute length

While we have 64 character attribute capabilities like most other codebases, PennMUSH allows 1024 attribute length attributes. Why you need one that long boggles the mind, but if you do use attribs that long you need to make sure they are cut down to the proper length.

Attribute contents

You'll be happy to know that Rhost allows upwards to 64,000 bytes of data to be assigned an LBUF. We strongly recommand to cap at 32,000 however as the various TCP socket protocols play nicer with that value.

256 color

Yup! We got it.

Unicode/UTF8

Yup! We got this too. Not quiet yet in the main branch, but download Kage's branch, you won't be dissapointed. We will have UTF8 in Rhost 4.0 when released.

Attributes per object

This is configurable with the VLIMIT @admin command, however, it is absolutely hard-limited at 10000 maximum. This is to avoid any DoS type situation and because frankly there should never be a reason to exceed that. If you need more, use @clusters.

Destroying

@nuke only works on players. @destroy works on non-players. Never the two will meet. We also have a built in recycle bin meaning anything destroyed will not be automatically recycled. If you want it recycled, you have to @purge it. Yes, if you use Myrddin's CRON, it has a built in entry to auto-purge anything older than 30 days. This also means you can on-line recover anything destroyed before that 30 days. Groovy, eh?

object id's

Yup, we got them. Even in searches, and, well, everything.

lsearch() and search()

lsearch() in Penn is not syntacically similar to non-Penn search(). This will have to be altered. In addition, search() in non-penn games have to have special consideration for escaping out the evaled args.

@locks can be different

We have many more lock capabilities and options so this should be a non-issue.

Customer user-locks

We do not have custom user-locks like Penn. We do, however, have the way to set encapsulated lock data into an attribute to fetch and compare against which I find more useful and far more flexible. See: lockencode(), lockdecode(), and lockcheck()

Attribute trees

Unlike Penn, we don't really have attribute trees. We do support the basic capabilities of it for compatibility if you load in softcode that uses it, but it doesn't have the advanced features of attribute trees. Please see 'help attribute tree' for more information.

Prefix permission locking

We do allow prefix permission locking, and some very advanced abilities of it. Please see wizhelp on @aflags for more information. - wizhelp @aflags - wizhelp atrperms_max - wizhelp atrlock - wizhelp atrperms

align() and printf()

We do not have align(). Most of the code that uses align() will have to be converted to our printf() (which is compatible but has different syntax)

MySQL

While we support MySQL, we do not have an async method like MUX2. This is just not possible, sorry.

Mail System

There are mail wrappers to mimic MUX/TM3 and Penn mail systems.

Comsystem

The softcoded comsystem mimics MUX/TM3 and Penn's comsystem.

Various Functions

There is a 'softcode.minmax' in the Mushcode directory that loads up a slew of @function wrappers that will emulate various functions that MUX, Penn, or TM3 has. We have the functionality for nearly all of them, but either our functions have different syntax, or we have different named functions that duplicate the functionality. It would be far better to recode it to use the native functions, but the @function wrappers are there for lazyness :)

Empty Attributes

Penn allows you to have empty attributes. Non-penn codebases do not. Thus, hasattrval and the like are not needed and should likely just point to hasattr instead.

Player Stats

MUX has some built in ways for player stats. We do as well but they're either done via functions or attribute contents. Code that requires this will have to be recoded.

Percent Substitutions

Some percent substitutions may differ between codebases. Luckily, Rhost allows the ability to remap or creaete new ones if this is a problem.

Switches

Some switches may not exist in Rhost that do in other codebases, in such a case, Rhost does allow the ability to @hook a command to define your own softcoded switch to a hardcoded command and work around the limitation.

Flags

Some flags may be missing. If it's a dummy flag, feel free to use the marker flags MARKER0 to MARKER9 to set them. If it's an existing flag that does similar features, feel free to flag_alias it or just flag_name it to the other name if you want.

Aliases

Multiple aliases are supported via @protect.

1.2.15 Things other mushes can do that Rhost can not and how to emulate it

PennMUSH

- Attribute trees. These are emulated as a base set and can be duplicated enough to at least port code.
- lsearch() will have to be recoded to search()
- align() will have to be recoded to printf()
- Penn allows empty attributes. Rhost does not. Work will have to be done to take this into consideration. - All *val() functions in Penn that are used will have to be remapped to a non-*val() function. It should be as simple as function_alias to the non-*val. Example: @admin function_alias=hasattrval hasattr
- Penn's hardcoded comsystem is emulated with the softcode comsys
- Penn's @mail system is workable with mail wrappers
- Pueblo is not supported.
- json is not supported.
- ssl is not natively supported (yet).
- This uses @shutdown/restart, Rhost uses @reboot

MUX

- Mux has an async mysql database engine. This is not possible with Rhost. You'll have to use the sync method instead.

- UTF8 is supported but internally passed differently.

- Mux's hardcoded comsystem is emulated with the softcode comsys

- MUX's @mail system is workable with mail wrappers

- Pueblo is not supported.

- This uses @restart, Rhost uses @reboot

1.3 Requirements

1.3.1 System Requirements

- Minimum 1 GB (memory and swap combined) to compile (functions.c is huge)

- Any Unix flavor should be fine. Linux, BSD, Mac OSX, Solaris, Tru64, AIX, etc.

- (BETA ONLY) cygwin under Windows. It requires the entire base development set and Requirements below.

- Disk: 100 MB or more (depending on size of db and how many backups you wish to maintain)

- Memory: 12-100 MB (depending on size of mush and what size buffers you select and packages you include)

Supported Platforms

SunOS (all platforms) Solaris (all platforms) Linux (all platforms except redhat 5.x mentioned below) AIX (all platforms) Ultrix (all platforms) iBSD (all platforms) FreeBSD (all platforms) OpenBSD (all platforms) NetBSD (all platforms) IRIX (all platforms) HPUX (32 bit systems only)

If it's not listed here, it probably still will compile clean.

Unsupported Platforms

Win32/Win16 Alpha systems.

Untested Platforms

HP-UX (64 bit systems) VMS (all platforms)

Known Platform Issues

On Alpha boxes running Redhat 5.0, structure pointers are slaughtered with the built-in gcc package (up to and including 2.8.x). Because of this some config options may not work fully or cause the server to crash. This is only a known issue with config options and only on this platform.

1.3.2 Requirements

RhostMUSH is a Linux or Unix based server software that runs as a daemon on the host. In order to build this software, you will need the bare minimum of the ability to run 'make' commands. Package requirements are as follows: * glibc and gcc/clang (compiling the code) * git (to clone the source and maintain patches) * bash/ksh/dash (or compatible shell - for use with build menu) * libcrypt (for password encryption - this is usually standard on unix based systems)

Optional Packages

RhostMUSH also offers optional linking and library attachments. For some of these libraries it will attempt to do auto-detection, but in a worse case scenario, there exists override hashes in the menu to disable options it thinks exist that do not. Optional packages are as follows: * openssl dev libraries/headers (for MUX password compatibility, and digest() and advanced cryptology functionality. * mysql client & mysql_config (required for mysql capabilities) * sqlite3 libraries (required for sqlite capabilities) * ruby/perl/python/etc (for custom interactive dynamic custom functions with the execscript() feature) * libpcre (if you wish to use system pcre libraries instead of the built-in ones)

1.3.3 Hosting Requirements

You will need a stable host and access to open a single port number of your choice on the firewall. Most games choose a number between 1025 and 9999, by convention. Please make sure your debug_id matches the port number + 5. So if your port is 1234, your debug_id will be 12345. The debug_id is for use in the API daemon that runs Rhost as a container to keep track of heap, stack, and execution location.

1.4 Installation

1.4.1 Compiling the code

make confsource

Yes, that's all you have to do.

You may also issue 'make source' if the Makefile is already defined how you want it to be. Please remember to 'make clean' before 'make source' whenever you alter the code or import new source code.

Note about Compiling

To install, type: make confsource

If your binaries do not work or you get an error type: ./bin/script_setup.sh Then type: make confsource

If you are importing a MUX2 flatfile, make ABSOLUTELY SURE that you select mux passwords as a compatibility option, or you will NOT BE ABLE to log in to players as the password will not be recognizeable.

Make sure to keep QDBM selected as it's a much more stable database engine that does not have attribute limit restrictions like GDBM does.

If you are converting from a Penn, TinyMUSH, or MUX database, make sure you drill down into the LBUF section and select, at minimum, 8K lbufs. You likely want that anyway as it gives you far more room for attribute content storage.

You can go up to 32K safely. While 64k is safe and does work, there are issues with networking and older routers that use a 32K TCP buffer size that can at times cut off the data as overflow resulting in output to the end-point players not receiving their data. So it is strongly recommended not to go above 32K in lbuffer size.

Go ahead and select 64 char attributes. It allows you to have 64 characters for attribute names. It's handy to have.

If you wish at this point to set up mysql and/or sqlite, you may do so. Yes, you can use them in parallel without any issue.

Note about Recompiling

If you plan to use 'make confsource' to recompile your source, you should first issue a 'make clean' before re-issuing a 'make confsource'. 'make confsource' remembers the last options you used.

A failure to issue 'make clean' prior to re-compiling with 'make confsource' or re-compiling with 'make source' can potentially leave stale object files which may cause unforseen issues when running code, including but not limited to random crashes. Generally whenever recompiling it's good to always make clean first.

Note about Patching

There's two ways you can look to patch the source. If you plan to run the RhostMUSH source from a git repository, then please use the git repo to constantly update your code. If you knew enough to want to set up a git repo then we expect knowledge on how to keep source trees updated in the git repo to be used the same as any other source distribution.

If, however, you have no idea what a git repo even is, or have no inclination of using git to manage your RhostMUSH source, or just don't care one way or another, then you can use the included patch.sh routine (from under the Server directory) to patch your source at any time.

From the server directory just type: ./patch.sh

That will auto-compile your source, auto make all your header files and essentially keep everything up to date to the latest source. Once that's done, all you do from within the game is two commands:

1. @reboot (or @reboot/silent) – This will load in the new binary

2. @readcache – This will read in all the .txt file changes

1.4.2 Configuring the game

When setting up a mush for the first time, make sure you have all the files configured correctly. This is with using the following file for configuration:

```
– netrhost.conf
```

1.4.3 Starting the game

Once done, you start up the system with the following command:

```
 - [sh/csh] ./Startmush

It will prompt you to start a new db if it doesn't find one.

You may also do the commands individually::

   [csh] netrhost -s netrhost.conf >& netrhost.log &
   [sh]  netrhost -s netrhost.conf > netrhost.log 2>&1 &
```

1.4.4 First login to the game

Once started, log in the #1 character (Wizard) with it's appropiate password (no, not 'potrzebie', but 'Nyctasia'). There were private reasons for the password change.

Once in, do a @shutdown to save the database. Then you can run Startup normally. You may make a backup of your database at anytime on-line by utilizing the @dump/flat option. A script comes with this distribution that allows the ability of auto-archiving your database for a configurable number of backups.

1.4.5 Reporting bugs or getting help

If you find any bugs or problems, notify one of the developers of RhostMUSH and a patch or workaround will be made available as soon as possible. Current developers are: Seawolf, Thorin, Ashen-Shugar, Lensman, Kale, Mac, Zenty, Ambrosia, Amos, and Morgan. They can be found around the net.

1.4.6 Installing using an ansible playbook

To begin, you will run the following command in a directory that will house your game:

```
git clone https://github.com/RhostMUSH/trunk Rhost
```

You may also just run the yml file and ansible (ansible-playbook) to install your RhostMUSH engine:

```
wget https://raw.githubusercontent.com/RhostMUSH/trunk/master/rhostinstall.yml
ansible-playbook rhostinstall.yml
```

This downloads the latest stable version of the code, bringing with it all patches and scripts, documentation and support tools that you will need.

1.4.7 Quickinstall guide to RhostMUSH

Obtaining RhostMUSH

It is assumed that you have gotten to this point with the following command:

```
git clone https://github.com/RhostMUSH/trunk Rhost
```

If you did NOT get it this way, your file permissions may not be properly set up. Please type:

```
chmod +rx bin/*.sh src/*.sh game/*.sh game/Startmush game/db_*
```

This makes sure all the build scripts are properly made executable. This will result in 'permission denied' or similar results when running a script.

Once ready to compile type:

```
make confsource
```

This will bring up a menu where you can selection options.

Important before you actually start building

The main parts of making your RhostMUSH, easy pleasy: #. The stunnel directory contains TLS/SSL connectivity. This has to be linked to another port and will tunnel to the mush port. The README file explains how to set up and configure your TLS/SSL connection. #. ./patch.sh – This makes sure you have the latest code. If you got this by git clone https://github.com/RhostMUSH/trunk then you can ignore patching. You can use ./patch.sh at any time to update your code. It ignores local.c incase you make your own modules. #. make confsource. Yup, it's menu driven, nifty eh?

1. Options you may want to select (other than the defaults):

2. 5 (%c is selected by default, but choose %x as well for MUX/TM3 compat)

3. 9 (if you want $commands to require the COMMAND flag)

4. 16 (if you want a wider WHO listing like older versions of MUX)

5. 22 (if you're converting a TinyMUSH3 or TinyMUX/MUX2 flatfile)

6. 24 (if you have issues with -lssl not being found)

7. B3 (for 64 character attribute names)

8. B6 (select 8K for Penn/MUX2/TM3 default, up to 32K. 64K is network intensive)

9. B5 (will be autoselected if you choose 8K or more. Pick this anyway)

10. B4 (if you have sqlite libraries and wish to use this)

1. 'r' to compile with the settings you selected.

2. Modify your netrhost.conf file as specified. Make sure to align your port and debug_id as shown in the netrhost.conf file.

3. If you wish to port in an old flatfile, please refer to the readme directory on how to port your flatfile in (README.DBLOADING).

Using the prebuilt flatfile

There are pre-loaded flatfile databases you can use at this point. The netrhost.db.flat and corrisponding netrhost.conf file will be located in the minimal-DBs/minimal_db directory.

You may auto-load the minimal db and corresponding netrhost.conf file with the command:

```
./minimal.sh
```

This is ran from within the 'game' directory. Once this is ran, you will need to customize the netrhost.conf file for your purposes. The port and debug_id must be changed at the very least. Keep the debug_id coordinated to the port as described.

To load a prebuilt flatfile

To use these follow these steps: 1. Make a backup of your existing netrhost.conf file:

```
cp game/netrhost.conf game/netrhost.conf.backup
```

2. Copy the netrhost.conf file into your game directory:

```
cp -f ./minimal-DBs/minimal_db/netrhost.conf ./game/netrhost.conf
```

3. At this point you can modify your netrhost.conf file settings in your game directory. Using an editor modify the 'port' and 'debug_id' respectively in your netrhost.conf as state. The 'port' will be the port the mush listens on, the debug_id is for the debug-stack and is your port with a '5' at the end. So if your port is 4444, the debug_id is 44445

4. Load in the flatfile into the mush (You could do this in the Startmush as well) Manually:

```
cd game
```

./db_load data/netrhost.gdbm ../minimal-DBs/minimal_db/netrhost.db.flat data/netrhost.db.new dwF

Start your mush:

```
./Startmush
```

This will load the db that you loaded.

——————OR——-

From Startmush:

```
--> ./Startmush
```

when prompted, hit <RETURN> for searching then select the number of the netrhost.db.flat that is listed as ~/minimal-DBs/minimal_db/netrhost.db.flat

Starting from scratch with a brand new database

1. You can modify your netrhost.conf file settings in your game directory. Using an editor modify the 'port' and 'debug_id' respectively in your netrhost.conf as stated. The 'port' will be the port the mush listens on, the debug_id is for the debug-stack and is your port with a '5' at the end. So if your port is 4444, the debug_id is 44445

2. Start your mush:

```
--> ./Startmush
```

You can use the 'vi' editor or 'nano' if you like a more menu driven DOS like experience. You can of course use any other editor you're familar with.

For a more thorough understanding of how to set things up, keep reading!

If you have syntax issues running 'make config', 'make confsource' or 'make bugreport' please run the script: ./bin/script_setup.sh

Now. . . things you may need to do on errors.

Instructions for starting a new RhostMUSH

Setup directory permissions

> run ./dirsetup.sh

> This is a simple script that will change file permissions and directory permissions to properly protect RhostMUSH. These settings generally work fine out of the box so you likely won't even have to set this up if you don't want to.

Compile the source code

Make and run the RhostMUSH source:

```
Type:  make confsource
```

If you get an error running the script itself:

```
type: ./bin/script_setup.sh

Then type: make confsource

After the compile process is done, you should be good to go.
If it complains about missing binaries then type 'make links'
```

Manual configuration of source code

To do manual configuration (skip if the previous step worked for you) And yes, this is a bit of a pain in the bottom, hopefully you will not need this.

You need the following definitions defined to make this work:

1. TINY_U, USE_SIDEEFFECTS, MUX_INCDEC, ATTR_HACK

2. (u()/u2() switched)

3. (sideeffects)

4. (inc()/xinc() switched)

5. (support for _/~ attribs)

You only need to do this if you received the RhostMUSH src. If you received a binary, continue on to the next part.

To compile the code, just type 'make confsource'. It will prompt you with settings on what you need to do. If you just want to quickly hand edit the Makefile, it is in the directory src (full path src/Makefile). Then you may just run 'make source', if you so choose to hand-edit the Makefile.

After the compile process is done, type 'make links'!

Loading a database for your MUSH

You now have a choice of optionally starting at a provided database or starting from scratch.

Option: Only perform these steps if using a provided database

Copy an existing flatfile and corresponding netrhost.conf file Default provied example:

```
1.  cp game/netrhost.conf game/netrhost.conf.backup
2.  cp -f minimal-DBs/minimal_db/netrhost.conf game/netrhost.conf
3.  cd game
4.  ./db_load data/netrhost.gdbm ../minimal-DBs/minimal_db/netrhost.db.
 ↪flat data/netrhost.db.new
```

Configure the netrhost.conf file for your MUSH

Go into the game directory and modify the netrhost.conf file The next step is configuring the mush to your config standards. There is a file in the game subdirectory called 'netrhost.conf'. You hand-edit this file and just follow what it says each one does. It's very well documented and should give you great details on what to edit. For most things, you can feel comfortable to stick with the defaults unless you wish to change them. The port and debug_id need to be changed.

Start the MUSH and login

From the game diretory issue:

```
./Startmush
```

To login:

```
co Wizard Nyctasia
```

Option: Things to do once you have connected if you did NOT use a provided database

1. @dig your master room and in your netrhost.conf file define master_room to this dbref (without the #. So like master_room 2)

2. Create an immortal holder charater (@pcreate then @set immortal) Feel free to set up holder characters for all the bittypes which are: GUILDMASTER, ARCHITECT, COUNCILOR, WIZARD, IMMORTAL

3. @chown/preserve the master room and #0 to the immortal holder character.

4. Log into the immortal character

5. @pcreate all your guest characters and set them up properly. My suggestion:

```
@dolist lnum(1,10)={@pcreate Guest##=guest;@set *Guest##=guest;@desc *Guest##=A␣
↪guest player.;@adisconnect *Guest##=home;@lock *Guest##=*Guest##}

@list guest will show your guest characters and if they're set up properly.
```

6. Any master room code you load in from your immholder character (or @chown/preserve to it) The readme directory has softfunctions.minmax that has MUX/Penn compatability functions and comsys. All other softcode (like mail wrappers) can be found on https://github.com/RhostMUSH/trunk in Mushcode.

Setup new character, staff, and take tasks that can only be accomplished by #1

Set up any other characters you want. Anyone immortal can issue @function, @admin, or anything #1 can do.

Setup daily backups for your game

Make SURE YOU RUN DAILY Backups. Rhost is very stable, but things outside the mush can damage the game. paranoia is fine, especially when they really are out to get you. TO make the backups, do the following:

```
@dump/flat      -- This makes a flatfile dump of the main database.  You want to run
→this daily.
wmail/unload    -- This makes a flatfile dump of the mail database.  You want to run
→this daily.
@areg/unload    -- Only worry about this if you are using auto-registration emailing.
→ Few do.
newsdb/unload   -- Only worry if you use the hardcoded bbs system.  Most don't use it.
```

The backup_flat.sh script (that launches automatically with Startmush) will archive all the above files if they exist. It moves these flatfiles into the 'prevflat' directory, then tarballs those and dumps consecutive backups in the 'oldflat' directory. By default it keeps 7 consecutive backups. You may alter this in the backup_flat.sh script itself.

Customtize the textfiles for your game

All connect.txt and customized files can be found in the ~/Server/game/txt directory. There is a README file there that explains their purposes in more detail. You can see more information on all files and how they inter-relate with 'wizhelp file'.

Make sure to read up further

The wiz bits can be confusing, so 'wizhelp control' is very helpful to give a high overview of what each bit does and their inter-relationship is.

1.4.8 What to type to configure and get your RhostMUSH up and running

You may configure Rhost three ways.

Creating a new game with a blank database

Modify your ./game/netrhost.conf file or what settings you want. Don't feel overwhelmed, it's all very well documented.

Creating a new game with Ambrosia's default database

Follow minimal-DBs/Amb-MinimalRhost/IMPORTANT_README

The netrhost.conf file you will copy is in minimal-DBs/Amb-MinimalRhost/game Copy this netrhost.conf file into your 'game' directory.

You will want the custom txt files under Amb-MinimalRhost/txt in your game/txt directory and to mkindx all the txt files. You can run ./Startmush -i to index.

When ./Startmush prompts you to load a flatfile, say 'yes' and hit <RETURN> to have it search for flatfiles, then select netrhost.db.flat from under the minimal-DBs/Amb-MinimalRhost directory.

The main steps to make sure you do for ~/Server/minimal-DBs/Amb-MinimalRhost/netrhost.db.flat – Ambrosia's secure and featured minimal db

1. Use the matching netrhost.conf file under the Amb-MinimalRhost/game directory

2. Load in the settings specified in the Amb-MinimalRhost/bin directory.

    1. Copy this file into your ~/Server/bin directory

    2. From 'Server' directory type: make clean

    3. From 'Server' directory type: make confsource and 'l'oad option 0

    4. Specify any -additional- options you want at this point.

    5. Recompile your code

3. Copy the files in Amb-MinimalRhost/game/txt into your ~/Server/game/txt directory

4. from your ~/Server/game txt file run on each of the txt files:

```
../mkindx <txtfile>.txt <txtfile>.indx
Where <txtfile> is the name of the file (minus the .txt extension)
```

5. If running, @reboot your game.

Creating a new game with the generic default database

Copy the netrhost.conf from minimal-DBs/minimal_db to your game directory.

When ./Startmush prompts you to load a flatfile, say 'yes' and hit <RETURN> to have it search for flatfiles, then select netrhost.db.flat from under the minimal-DBs/minimal_db directory.

Starting your MUSH

Once you have used one of these three methods to obtaina database, you can start your mush up. At this point type from the game directory:

```
./Startmush
```

Backups for RhostMUSH

Backups are already handled and integrated with a script 'backup_flat.sh'. If you wish to customize this, feel free. Again, it is well documented and just require changing settings at the top of this script.

By default, it does 7 contiguous backups. You may increase or decrease this value to any value you want.

It will, by default, backup all your txt/.*txt files, your netrhost.conf file, your netrhost.db.flat (mush db) file, your RhostMUSH.dump.* (mail db) files, your RhostMUSH.news.* (internal news/bbs db – if used), your RhostMUSH.areg.* (the autoregistration db – if used), and any sqlite database you currently may be using which are OPTIONALLY backed up if you remove the '#' from before it.

The backup script also will optionally rcp/scp, ftp, or mail any backups you want to a remote destination. Be forewarned, the backup files can potentially get rather large for larger games, even compressed. The average size for these files will be 1-5MB. It could potentially get over 10-20MB in size for excessively large games, so plan accordingly.

Be aware that the backup system will NOT make successful backups if you run out of disk space. This includes actually running out of disk space or running out of disk quota. There is a mechanism inside the backup script to specify an email address that you wish to get alerts from in these instances. I recommend using it.

If you make changes to your backup_flat.sh script with an already active and running mush and wish to just restart the backup procedure just issue: ./backup_restart.sh

Troubleshooting issues with starting up

Problem: If it says the shared ID is already in use

A1: please verify that it is the right shared debug_id in your netrhost.conf file

A2: Force a start by ./Startmush -f

Problem: Your log file is massive and your mush is running

A1: To rotate this use the @logrotate command. See wizhelp on @logrotate

Problem: The database flatfile you're loading can't load because a db is already defined

A1: remove netrhost.db* and netrhost.gdbm* from your data directory

Problem: The mail database won't load and mail shows 'offline'

A1: wmail/load

1.4.9 Windows

Installing on Windows 10 with BASH

Rhost can be compiled and run under the new Bash on Ubuntu on Windows. This has been tested with the Preview build 14342.

1. After installing Bash you will need to install the following packages: git make gcc openssl (optional) libpcre3 (optional) libpcre3-dev (optional)

2. When configuring rhost (using confsource) select the Disable Debugmon option.

   3. When you issue Startmush, you must pass the -cyg option.

Installing on Windows with Cygwin

Rhost does work under windows using the cygwin package.

1. When you do install cygwin, the following packages must be added: make git gcc crypt openssl (optional) gdbm bash

   2. The src/Makefile has to manually have the CYGWIN line uncommented.

   3. When you issue Startmush, you must pass it the -cyg option.

1.5 Database

1.5.1 Loading an existing Database

To load in a previous database, you run the db_load script.

From the game directory you would type:

./db_load data/netrhost.gdbm yourflatfilehere data/netrhost.db.new

Then you just follow the prompts to load in your flatfile there.

If you wish to have #1's password reset to 'Nyctasia' please add this to the bottom of your netrhost.conf file:

newpass_god 777

The caveat is that you must not have any netrhost.db* or netrhost.gdbm* files in your data directory prior to loading it in. It'll error out if previous files exist. So you will need to move all files that start with netrhost.db* and all files that start with netrhost.gdbm* to another directory.

Your flatfile tends to be named 'netrhost.db.flat' which is in your data directory. You can, however, name your flatfile anything you want and have it in any directory you want.

To make a flatfile in game, you just issue @dump/flat. You can specify a filename after it, otherwise it assumes the name 'netrhost.db.flat'.

1.5.2 Converting a flatfile database for use in RhostMUSH

In the ~/Server/convert directory there is a script called 'doconvert.sh'

This script will convert most flatfiles from existing mush engines to RhostMUSH. The exception is PennMUSH 1.8.0 and later. For this there is a BETA converter penn18x_converter.tgz. This is proven to work, most of the time, with codebases between 1.8.0 and 1.8.2. It has not been fully vetted with the latest PennMUSH databases. Our apologies.

To convert a non-pennmush game (or a pennmush 1.7.4 or earlier), you first need a valid flatfile of the game you're wanting to convert. Please refer to the documentatation of the mush engine in question (MUX, Penn 1.7, TM2/3) on how to do this. Once you have it type:

./doconvert.sh FLATFILETOCONVERT FLATFILEOUTPUT

In this instance, FLATFILETOCONVERT will be the filename (with full path) to the flatfile you are wishing to convert.

The FLATFILEOUTPUT is anyfilename you wish to name the RhostMUSH converted flatfile. I suggest netrhost_converted.db.flat so you know by the name what it is.

Follow what it asks for and just let it do its thing.

1.6 Gettin Started

1.6.1 What to ype to get the basics running if you did not choose a pre-existing flatfile

If you decided to get a bare-bone configuration, you will find your mush has just two things. The #1 (God) player and the starting room #0. That's it.

Login to #1 from the connect screen

Nyctasia is the default password:

```
co #1 Nyctasia
```

Change #1's password to something you'll remember but is hard to guess

Note: yourpasswordgoeshere can be any password you choose. Choose well:

```
@password Nyctasia=YOURPASSWORDGOESHERE
```

Master Room

At this point you should create your master room:

```
@dig Master Room
```

Note: Reason: You need a master room to contain global $commands for players ^listens are not global for intentional reasons. It's far too much overhead for far too minimal gains that few people need or use.

Flag and protect Master Room

It will return a dbref#, it should be #2 if you've not created anything else:

```
@set #2=safe ind halt float
```

Player Holder Characters

Feel free to change the password to what you want

Note: Reason: You will want to chown global room or global areas to a given bitlevel and a method to keep organized. Note: wizhelp control will give you a complete breakdown of what each bit can do.

Immortal Holder

```
@pcreate ImmHolder=abc123
@set *Immholder=no_connect !wanderer immortal
@badsite *immholder=*
```

Royalty/Wizard Holder

```
@pcreate WizHolder=abc123
@set *wizholder=no_connect !wanderer royalty
@badsite *wizholder=*
```

Councilor/Admin Holder

```
@pcreate AdminHolder=abc123
@set *adminholder=no_connect !wanderer councilor
@badsite *adminholder=*
```

Architect/Staff Holder

```
@pcreate StaffHolder=abc123
@set *staffholder=no_connect !wanderer architect
@badsite *staffholder=*
```

Guildmaster/Lead Holder

```
@pcreate GuildHolder=abc123
@set *guildholder=no_connect !wanderer guildmaster
@badsite *guildholder=*
```

Chown #0 (The starting room) and #2 (The Master room) to immholder

Note: #0 you can chown to a different bitlevel if you want, but the master room should always be owned by an immortal

```
@chown/preserve #0=*immholder
@chown/preserve #2=*immholder
```

Create yourself your own immortal player then log off #1 and into this immortal player

Note: Pick what you want for playername and playerpassword

```
@pcreate PLAYERNAME=PLAYERPASSWORD
@set *playername=!wanderer immortal
```

Log out of #1 and log into your immortal player

Note: Use the playername and password you created in the step before

```
LOGOUT
co PLAYERNAME PLAYERPASSWORD
```

Create your guest characters

Note: Feel free to change the description if you want

```
@dolist lnum(1,10)={@pcreate Guest##=guest;@set *Guest##=guest;@adisconnect *Guest#
↪#=home;@lock *Guest##=*Guest##;@desc *Guest##=A Stranger in a strange land.}
```

Dig a closet to store important objects but non-master room

Note: name it anything you want, just remember it.

```
@dig Closet
```

Set the flags on the closet and ownership of it

Note: Use the dbref# that it returned when digging the closet and not #123

```
@set #123=inh safe ind float
@chown/pres #123=*immholder
```

Create an Admin object for future ease of customization

```
@create AdminObject
```

Set the flags on the admin object and ownership and location

Note: this object must be immortal owned. Use the dbref# returned previously instead of #123

Note: Use the closet dbref# instead of #234

```
@set AdminObject=halt safe ind
@chown/pres #123=*immholder
@tel adminobject=#234
```

Add admin object to configuration

Modify the netrhost.conf file with the following line at the bottom after the line '# define local alises here' where you replace 123 with the dbref# of the admin object that you made:

```
admin_object 123
```

Reboot your mush to load up the change for the admin object

```
@reboot
```

Do @admin/list to see if it shows the admin object

Note: do wizhelp @admin for more information on how to use this

```
@admin/list
```

Load in all the various softcode that you want

This is client dependant based on whatever method it uses to load softcode.

Myrddin MushCron

Load in the Myrddin Mush Cron. It's a very handy piece of software and strongly suggested to do so. You can find this in the 'Mushcode' directory off the main Rhost directory. Filename:

```
~/Rhost/Mushcode/MyrddinCRON
```

Note: The globalroom() function returns the dbref# of the master room. Handy!

```
@chown/preserve the myrddin mush cron to immholder, then move to maste room.
@chown/pres Myrddin=*Immholder
@tel Myrddin=#234 (where #234 is the dbref# of your code closet)
```

AshCom

Load in default softcoded comsystem. This is PennMUSH and MUX/TM3 compatible. Filename:

```
~/Rhost/Mushcode/comsys
```

Chown the Comsystem and everything inside it to immholder:

```
@chown/pres ChanSys=*Immholder
@dolist lcon(chansys)=@chown/pres ##=*immholder
@tel Chansys=globalroom()
```

Mail Wrappers

Load in mail wrappers if you want MUX/TM3 and/or Penn mail wrapping. Filename (MUX/TM3):

```
~/Rhost/Mushcode/mailwrappers/muxmail.wrap
```

Filename (Penn):

```
~/Rhost/Mushcode/mailwrappers/pennmail.wrap
```

Chown to immholder:

```
@chown/pres MUX=*Immholder
@chown/pres Penn=*Immholder
@tel/list mux penn=globalroom()
```

Myrddin BBS

Load in Myrddin's BBS Filename:

```
~/Rhost/Mushcode/MyrddinBBS
```

Chown to immholder and the contents of it as well:

```
@chown/pres Myrddin=*Immholder
@dolist lcon(myrddin)=@chown/pres ##=*immholder
@tel myrddin=globalroom()
```

Other Mushcode

There's other code in the Mushcode directory that you are welcome to install. You would follow similar procedures for loading it in, chowning it, and moving to the master room as you did above.

Likewise, any softcode you find on the internet or on other mushes should be portable to RhostMUSH with little to no changes depending on the complexity of the code in question.

1.6.2 Minimal DB instructions

The 'retired' directory has older image files if you're interested

Please use the netrhost.conf file with the database as they're linked.

The flatfile must be loaded in as a new db

This is a minimal db with basic 'features' built in.

Copy the txt files into the Rhost's txt directory off game:

```
cp txt/* ~/Rhost/Server/game/txt
```

mkindx the files (substitute FILENAME with the filename):

```
cd ~/Rhost/Server/game/txt
../mkindx FILENAME.txt FILENAME.indx
```

Startup Steps

1. Using the Startmush utility for the first time, select the load db method

— or —

1. copy the netrhost.conf file into the games directory

2. make any relevant changes you wish

3. db_load the flatfile

    1. go into the game directory

    2. type:

    ```
    ./db_load data/netrhost.gdbm ../minimal-DBs/minimal_db/netrhost.db.flat data/
    →netrhost.db.new
    ```

4. Startmush as expected

1.6.3 Ambrosia's Minimal Rhost DB

Version: 1.0.5 2020-01-31

Version history:

1.0.0

- Initial database setup.

1.0.1

- Small fixes of objid(), isstaff() and bccheck() permissions and handling.

- bittype() access lowered to Architect level

- NO_CODE flag made visual to Architect

1.0.2

- Several convenience changes and fixes: _ Attributes moved to @aflags system, allowing Architects to set, Guildmasters to see them.

- @flagdef lowered to Royalty level. @quota/max, @quota/unlock and @convert moved to Architect level.

- NO_CODE flag made settable/unsettable by Architects.

- Fixed typo in conf file: ifselse -> ifelse

- Switched _Attributes to use the @aflags system See: Guildmaster Set: Architect

1.0.3

- Removed @flagdefs from in-game softcode, converted to flag_access_* config options

- Lowered mailstatus() access to architect.

1.0.4

- Changed softcoded objid() to tag(), due to Rhost's new hardcoded objid() which does perform a different functionality.

- Added more staff recommendations to this file.

- Added Reality TXLevel 'Admin' to all objects in the db except #1

1.0.5

- Replaced softcoded tag() system with Rhost's new hardcoded @tag/tag() system. All previous tags are set on the database. The Tag Object was removed.

- @function startup on BC-Admin-Royalty fixed - @wait 1 workaround for Tags in place.

- Places System @startup integrated into BC-Admin-Royalty's @startup

- Made @dump and @dump/flat available to Councilors in netrhost.conf

1.0.6

- A small typo fix in netrhost.conf. float_preciiosn -> precision and functions_max -> function_max. Thanks to Bobbi@COH

Introduction

Note: READ THIS DOCUMENT CAREFULLY!

Greetings,

This minimal Rhost DB was made with a secure setup, and as a good base to start a new game off in mind.

Features

Configuration

- Limbo, Master Room and Auxiliary room.

- BC-Admin-<bitlevel> characters set up for each bitlevel to own global and data objects, and inherit to.

- BC-Admin-Mortal is @powered EXAMINE_ALL(Guildmaster), NOFORCE(Architect) and LONG_FINGERS.

- @startup on BC-Admin-Immortal lowers DARK flag access to Councilor level, and NO_CODE visual access to Architect level.

- Global Command objects inheriting from each bitlevel, with a separate staff-only object for each level.

- Global Function objects inheriting from each bitlevel.

- local Function objects inheriting from each bitlevel.

- @function and @hook access lowered to Royalty level to remove immediate need for Immortals or actual Immortal code.

- @rxlevel, @txlevel, bittype() access lowered to Architect level to remove immediate need for Royalty in many cases.

- @startup on BC-Admin-Royalty to automatically load @hooks and @functions from the Global Function objects, based on attribute naming.

- Misc Data object to hold general data, like Staff lists etc.

- Reality levels 'Real' and 'Admin'.

  All created items and players by default are in Recieve-Level 'Real' and Transmit-Levels 'Real' and 'Admin'.

- All globals, Master Room, BCs-*, and other staff/code-related objects currently have only 'Admin' as their Transmit-Level. This does not prevent them fromi working properly. The only exception is #1, who has empty reality levels.

- The supplied netrhost.conf offers a secure setup of options, allows Royalty to use @hook and @function, and also sets the function_access of several functions to !no_code, which allows NO_CODE players to use the comsys properly.

  IT IS HIGHLY RECOMMENDED to use this .conf as a base for this DB. The 'Port' configuration parameter is XXXX'd out. Set it first before starting your game.

- All existing objects have been @set SAFE and INDESTRUCTABLE.

- All existing objects have a paranoid series of @locks set on themselves.

- The +supersafe command is provided on #1 as an example of what was used to easily set this on objects.

- Players are @set NO_CODE and WANDERER by default. They get 40 credits on creation, and a 1-credit-per-day paycheck.

- All *mit sideeffects, as well as set(), create() and list() are enabled. The latter three are necessary for the Comsystem. The rest of sideeffects are disabled completely.

- Flashing ansi is disabled.

- _Attributes are settable by Architects, and seeable by Guildmasters. Read: Still invisible and unsettable by mortals.

- Architects can set up, unlock, and change alternate @quota on players.

- Architects can set/unset the NO_CODE flag.

- Guildmasters can see _Attributes

- Architects can set _Attributes

Softcode

- Set-up compatibility SoftFunctions and @hook object.

- Set up Comsys 1.0.9b at Architect level. (+bbhelp command)

- Set up Myrddin +bboard at Architect level.

- Set up Myrddon Cron at Architect level.

- Anomaly Jobs (+jhelp)

- SGP Places & Mutter

- Set up Penn-style follow.

- Set up @scan (Up to architect-level items).

- Set up Penn- and Mux compatibility Mailwrappers. (phelp and mhelp commands)

- help .txt files and .indx files for the above.

- @dynhelp access lowered to architect to call above helpfiles.

Functions

- isstaff() - Softcoded function that returns '1' if its argument matches a #dbref in the 'isstaff' attribute on the Misc Data object.

- bccheck() - Softcoded function that returns '1' if its argument matches a #dbref in the 'bcs' attribute on the Misc Data object.

- width() - Softcoded function that returns 78 for now. For cross-MU* compatibility.

- pass() - Softcoded function that takes a number as its parameter, and return a random string of that length. Perfect for setting random passwords.

- cmdmessage() - Softcoded function that takes two strings as its parameters. Returns '<< STRING1 >> String2'. The <<>> part is highlighted red. Good for all kinds of messages sent by game commands.

- header() - Highly versatile, and a buffer-saving alternative to using printf() for centering with ansi borders. HIGHLY recommended to use instead of printf() for such things.

```
header(text,width,filler,fillercolor,outerpadding,paddingcolor,
       leftinnerpadding,leftinnercolor,rightinnerpadding,rightinnercolor)
 text - Text to center
 width - Width of the header, defaults to width()
 filler - Character(s) to draw the line with. Default: =
 fillercolor - ansicode to color the line with
 outerpadding - Characters to frame the outer ends of the line with.
 paddingcolor - ansicode to color the outer characters with
 leftinnerpadding - characters to put at the left side of <text>
 leftinnercolor - ansicode to color the leftside characters with
 rightinnerpadding - characters to put at the right side of <text>
 rightinnercolor - ansicode to color the rightside characters with
```

Note: ALL of header()'s parameters are optional. By default, header() simply draws a 78-char wide line of ='s. Simply leave parameters empty if you want to set one of the latter parameters.

Bitlevels

The whole DB is highly geared for a low-bitlevel setup. I am a strong believer in least-privileges-needed to do the job. Bittypes and powers are tools to do that job, not badges of friendship or trust that get tossed about.

Note: Here is my suggested list of powers and bittypes for staffers.

Storytellers

@powered TEL_ANYWHERE, JOIN_PLAYER and GRAB_PLAYER on Guildmaster level.

Builder-BCs

Mortal, with @quota and money for their job. There should be one shared BC for each area of the game, like BC-Houston. Special Rooms, items or exits that require privilegs to examine or @tel a player should belong to a BC-Houston-Powered that is @powered EXAMINE_ALL, LONG_FINGERS And TEL_ANYTHING on Guildmaster level. If the object actually needs to modify a player directly, have it use a restricted staff Global, or if you absolutely must, make a BC-Houston-Admin and @set it Architect. Do not give normal builders access to it, only @chown things to it and @set them inherit after review.

Both the -powered and -admin BCs can have random passwords and be @set NO_CONNECT.

Building Head

@set Guildmaster, powered TEL_ANYWHERE, TEL_ANYTHING and optionally CHOWN_OTHER on Guildmaster level. Mind that the latter technically allows them to @chown anything guildmaster- and lower-owned in the master and auxiliary rooms. However, it allows the Building Head to @chown items between BCs- and to the BC-<location>-powered.

Enforcers

As Storyteller above, plus being @powered Security at Guildmaster level, in order to handle problem players.

Optionally always given to Storytellers.

Coders

@set Architect

Head Coder

Always trust your head coder. @set Architect for the everyday bit. Give access to a maintenance Councilor bit for special code projects. Finished code along those lines should get @chowned to the bc-admin-councilor.

If you as the MU* Head(s) don't know Softcode well, or want to leave anything Code to your Head Coder, also give them optional access to a maintenance Royalty bit in order to properly code banning/blacklisting +commands and other rare code that requires Royalty powers. Again, chown finished code to bc-admin-royalty.

MU* Head(s)

You're the boss(es). But please use an Architect bit for your everyday things. Keep Immortal to yourself. Keep #1 to yourself. And seriously avoid using either of them except for creating a Royalty bit or doing intricate DB maintenance.

Site Admins

They already have more powers than any in-game bit can ever have ;)

Depending on actual involvement with your game, their abilities in-game can range from merely being @powered free_wall for notifying players of downtimes and/or being @powered shutdown in order to shut down the game for maintenance, up to being the only person with actual access to #1.

Globals

Handle necessary functionality for adminning through the admin-only globals and softcode.

The setup I personally suggest is to have ALL staffers be AT MAX Architect-level for everyday work and communication, with special coders that -really- require it having Councilor-characters available to log into for maintenance or special code setup. Technically if everything is done right, the Coder(s) of the game do not require higher privileges than Architect for the vast majority of things. Royalty-level code should be a rare exception, if at all necessary. The MU* Head(s) or site-admin should be the only one having access to #1, Immortals or perhaps even Royalty. The BC's, Global Function objects and Function objects at level Royalty and higher have simply been provided as a if-necessary convenience.

Current objects are only @chowned to certain bitlevels if it is really required for them to function. Whenever possible, they have been @chowned to the mortal BC-Admin-Mortal. All custom global functions listed above are on the semi- -mortal Global Functions object. The Master Room and Auxiliary Room have been @chowned to BC-Admin-Architect.

The Comsystem and +bboard are owned by BC-Admin-Architect, which means that higher bitlevels might not be able to use those systems if they hide and set themselves DARK. This is intentional. The Architect bitlevel is enough to freely set attributes on players, so these systems did not need anything higher, and it prioritizes Councilor+ as mere mainenance-duty bitlevels. Even the MU* Head should log on as an Architect for everyday things.

The Comsystem and BBOARD have been modified to be configurable by Architect and higher. Both systems have a CANUSE attribute with the according code on them. Note that if you want both systems to be only configurable by Councilor+, that instead of @chowning them to a Councilor after changing those attribute for Councilor or higher, I suggest to simply @set the bboard and comsystem core objects NO_MODIFY instead, keeping them at Architect-power but making them unmodifyable by Architects.

Quota

I highly recommend the use of the alternative @quota system. BC-Admin-Mortal and BC-Admin-Guildmaster both have this @quota system set up on themselves. Both of them have a high amount of money for everyday operations. You should not give them free quota or money.

Functions

I also recommend to setup most global functions with /Privileged even if they are mortal-powered, to make them work even when players are set NO_CODE and WANDERER by default.

Enjoy!

Compiling

P.S. the 'bin/asksource.save0' file has been supplied for loading in the 'make config' or 'make confsource' step of Rhost installation. It provides the settings I have used when creating this database. Some settings, like the ANSI substitution, are used in the DB.

–Ambrosia@RhostMUSH

1.7 What FLAGS, TOGGLES, POWERS, DEPOWERS, and BITLEVELS mean in RhostMUSH

1.7.1 Flags

Flags are pretty much exactly the same as any other mush. It's a flag that you set or unset on a target which then enables/disables or alters something that target can do. There's help on all the flags in help and wizhelp.

1.7.2 Toggles

Toggles were designed as a single point flag that immediately enables or disables a set ability or condition, thus a 'toggle'. It works exactly like a flag and was originally designed for two reasons. To distinguish from the multi-meaning of a 'flag', and because frankly we ran out of flag space :)

1.7.3 @power

A power is similar to a power on other mushes, but unlike them, our powers are multi-tier. This means that they can be customized to empower something at a given bitlevel. You may empower something from guildmaster up to councilor level. There are some powers with a power level of N/A meaning they are a toggle power granting an absolute power level as specified in the help for that power. This requires the INHERIT flag for non-players to inherit powers, however, a specific object can be granted a power as well.

1.7.4 @depower

This is the anti-thesis of @power. Also, depowers do not require inheritance. They also have priority over flags, toggles, and powers. You can use depower to remove or lower abilities and control from a target, even a full wizard (royalty) can be depowered.

1.7.5 Multi-tiered bitlevel systems

RhostMUSH offers a multi-tier bitlevel system. They go in order of presidence You do not have to use all these bits, only use what you want.

ghod (#1) <bitlevel 7>

This bitlevel can do everything. Only those who you trust with absolute power should have this. Period.

Immortal(i) <Level 6> - Basically #1

The only thing this bitlevel can not do is directly effect #1, set/unset some internal flags/attributes, and set/unset the immortal flag. These players can do EVERYTHING else. Treat this bit as you would treat #1. Only give it to those you know without a doubt you can trust.

- Can do everything except set some internal flags, effect #1, and set/remove the immortal flag.

Royalty(W) <Level 5> - FULL wizbit level

This is your standard wizard. They can do everything you're used to on other mushes that wizards can do. In addition, they also override all locks by default (this can be disabled), and they have an enhanced wizcloaking ability (which also can be disabled). They can also set all the lower bitlevels.

- All things of Level 4 and lower
- Ability to set more flags: STOP, NOSTOP, FUBAR
- Ability to @attribute,
- Ability to WIZCLOAK

Councilor(a) <Level 4> - High wizbit level

This is your almost-but-not-quite wizard. They have access to about 80% of the wizard commands. This includes @nuke, @toad, @newpassword and the like. The only things they can't do that wizards can is cloak, override locks, and use some of the database manipulation tools in wizhelp.

- All things of Level 3 and lower
- Ability to set more flags: NOCONNECT, WANDERER, FREE
- Ability to @nuke, @toad, @boot, @chownall, @dbck, @poor, @newpassword, @pcreate, slay

Architect(B) <Level 3> - Middle wizbit level

This is your sub-wizard. They still have the ability to control anything their bitlevel and lower (including @chown, @destroy, etc) but do not have any control of other players (like @nuke, @toad, etc) but they can set the slave flag. Otherwise, all things their level and lower they can treat as if they owned it.

- All things of Level 2
- Ability to fully control and modify anything their level and lower (including @cloning, @destroying, etc)
- Ability to use @tel on anything their level and lower.
- Ability to bypass jump_ok rooms on anything their level & lower.
- Ability to set some restricted flags: SLAVE, NO_YELL
- Has infinite quota and money
- Able to give negative money (Steal)
- Able to @toggle the MONITOR

Guildmaster(g) <Level 2> - Lowest wizbit level

This is the lowest wiz bit. They only have moderate abilities. They can examine/decompile anything their level and lower, they can @guild/@quota people, and they have a few other minor abilities. They don't have free money however.

- Ability to access things remotely (long_fingers)

- Things are FREE for them in the queue.

- Can see dbref#'s of things their level and lower

- Can examine/decompile things their level and lower.

- Can set @quota/@guild on their level and lower.

Wanderer <bitlevel 0>

This is a hinderance flag. This flag is automatically set on new players that are created (which can be disabled). This flag stops the player from creating/destroying any database information. In effect it stops them from any type of building type commands. They still are allowed to set/unset locks/attributes/etc though without hinderance.

Guest <bitlevel 0 as well>

This is a bigger hinderance flag. By default all guests should be set this. This flag stops the player from ANY database manipulation along with @teleporting, and many other advanced commands. It's extreamly dehibilatating.

1.7.6 Altering bitlevels

Please keep in mind each of these bitlevels can be tweeked with the @admin parameters and with the @powers (accessable by royalty) or @depowers (only by immortal and higher).

1.8 Security

1.8.1 Considerations to locking down restrictions in RhostMUSH

Sometimes, you want to have things run at various privilage levels and do not want to have things with too much access. Weither that is online objects or players you want to block from connecting to your mush. Here's things you can do.

One thing to keep in mind is that RhostMUSH, unlike PennMUSH is not flag dependant on permission level, it's ownership based. While setting a wizard flag on an object would work, it's not recommended and it is instead recommended to chown the object in question to a wizard (like your wizard holder character) Then the object must be set inherit to actually inherit the wizard.

Note: inherit is required to inherit anything from the player. Flags, powers, toggles. The only thing that is inherited automatically is depowers.

Online: Blocking object abilities

We have various flag levels. It is strongly recommanded you check wizhelp on 'control' for a detailed overview of what each bitlevel can or can not do prior to giving the ownership to the object. Things useful for tweaking control on players and objects:

FLAGS (access with @set)

IMMORTAL, ROYALTY, COUNCILOR, ARCHITECT, GUILDMASTER, FUBAR, SLAVE, SIDEFX, NO_CONNECT, WANDERER, SAFE, AUDITORIUM, BACKSTAGE, NOBACKSTAGE, INDE-STRUCTIBLE, INHERIT, JUMP_OK, NO_TEL, NO_WALL, NO_EXAMINE, NO_MODIFY, NO_CONNECT, NO_POSSESS, NO_PESTER, NO_OVERRIDE, NO_USELOCK, NO_MOVE, NO_YELL, CLOAK, SCLOAK, DARK, UNFINDABLE, SEE_OEMIT, TELOK, SUSPECT, SPAM-MONITOR

TOGGLES (@toggle)

BRANDY_MAIL, PENN_MAIL, MUXPAGE, VPAGE, NOISY, MONITOR* (all monitor toggles), MORTALREALITY, NODEFAULT, NO_FORMAT, PAGELOCK, SNUFFDARK, VARIABLE

@powers, @depowers, and @locks

Please review help (and wizhelp) for each of these items on how it can affect a player, thing, exit, or room. The help is quite verbose.

Offline: Blocking twinks from being abusive on your game

FLAGS : FUBAR, SLAVE, NO_CONNECT Commands: : @boot, @nuke, @toad, @turtle Sitelocks: (@admin) : for-bid_host, forbid_site, register_host, register_site, noguest_host, noguest_site Sitelock by player : @badsite, @good-site, NO_CONNECT (flag) Monitoring player : SUSPECT (flag), @snoop TOR/Proxy blocking: : @blacklist (see shell's tor_pull.sh), @admin proxy_checker (see wizhelp), @tor (see wizhelp)

1.8.2 Extended lockdown of the mush and considerations

These are flags, powers, toggles, and various conditions for consideration when you decide to use some of the advanced features of RhostMUSH. These are not all that is availble, but tend to be the juicier ones to consider.

Attribute Restriction

@attribute – Used for user-defined attributes @admin attr_access – used for built in attributes (like desc) @aflags – Used to set up lovely delicious attribute permission masks

Command Restriction

@icmd - Very useful. Please see wizhelp on it. It disallows commands from executing including over-riding them with softcode alternatives @admin access - Changes permissions, disables, or sets to be overridden a command. Useful when you plan to override commands with softcode.

Flag/Toggle Restriction

@flagdef - Again, see wizhelp on this. There are also netrhost.conf options so you can have them loaded at start. This allows tweaking flags and toggles to who can set/unset/see as well as what type can use it or wha type it can be used on.

Config restrictions

@admin config_access - Changes permission of who can set a config param

Function Restrictions

@function/@lfunction – Allows softcoded functions that you can optionally lock down at your leasure @admin function_access – You can use this even on softcoded functions if you so desired.

Flags

GUEST - This is your guest flag, it should only be set on guests WANDERER - the WANDERER flag is default on new players. This flag disables all building abilitites of the player. NO_COMMAND - You can use this to stop a player from being able to connect without worrying about changing their password FUBAR - As the flag states, it f*'s them beind all recognition. It essentially stops them from doing absolutely anything in the mush but pose and say. Yes, it even disables the quit command. SLAVE - Funny enough, slave allows anything but say and pose. To ruin a troll's life, set both FUBAR and SLAVE and sit back and smile. NO_TEL - The target can't teleport or be teleported NO_MOVE - The target is locked at their location unable to move at all NO_WALL - They do not see any @wall except a wizard @wall/no_prefix. This has the bonus of snuffing db save messages. NO_POSSESS - Sometimes it's useful to grant a builder character to multiple players. The NO_POSSESS flag makes it so that player can not be logged in more than 2 times. NO_MODIFY - The target can not be modified (except by immortal/#1) NO_EXAMINE - The target can not be examined/decompiled (except by immortal/#1) STOP - Once a matching $command is found on an object set STOP, it 'stops' trying to find other $command matches. NOSTOP - If a target that is set STOP is also set NOSTOP, it will check the master room for a command and execute that as well if found. NO_PESTER - Stops target from @pemit or whisper. You may use @icmd as well. NO_OVERRIDE - Useful for immortals. By default they override all locks, including attribute locks. This makes it so an immortal's passing of locks will behave like a mortals NO_USELOCK - This is like NO_OVERRIDE but only effects uselocks. You likely want to set this on your immortal and wizard. NO_ANSINAME - stops a target from having an ansified name NO_CODE - lock down advanced coding from a target SPAMMONITOR - stop a target from issuing more than 60 commands a minute. FREE - Stop costing money for day to day processing of commands/building

Toggles

MONITOR - Enables site monitoring. This is the main toggle MONITOR_SITE - Adds site information to site monitoring MONITOR_USERID - Adds the userid to site monitoring MONITOR_STATS - Adds connection stats to site monitoring MONITOR_FAIL - Adds showing failed connections to site monitoring MONITOR_CONN - Adds connection monitoring to site monitoring MONITOR_DISREASON - Adds disconnect reasons to site monitoring MONITOR_TIME - Adds time stamps to site monitoring MONITOR_BAD - Shows all bad creation attempts to site monitoring MONITOR_VLIMIT - Shows attempts to bypass MAX ATTRIBUTES MONITOR_AREG - Shows all auto registration attempts MONITOR_CPU - Shows all CPU warnings and/or alerts on the mush NO_FORMAT - Bypasses @conformat, @exitformat, and other formats SEE_SUSPECT - Allows you to see suspect info in the WHO/DOING FORCEHALTED - Allows you to @force/@sudo a HALTED target NOSHPROG - Disallows using '|' to execute commands outside @program PROG - Allows the target to use @program IMMPROG - Disables the ability to use @quitprogram from a @program PROG_ON_CONNECT - Allows a @program to resume if someone reconnects IGNOREZONE - Enables a zone to process @icmd's PAGELOCK - Enforces target to require passing pagelocks MAIL_LOCKDOWN - Blocks the ability of a wizard to check another player's mail ATRUSE - Enables the attribute to use attribute content locking NOGLOB-PARENT - Disables the target from inheriting global parenting LOGROOM - Enables system logs on the room EXFULLWIZATTR - Allows target to examine all wizard attributes NODEFAULT - Disables attribute formatting/handling on the target CHKREALITY - Enables the use of reality locks on the target HIDEIDLE - Disables deidling when you execute any command MORTALREALITY - Enforces a wizard to pass realities as a mortal SNUFFDARK - Hides dark exits from a wizard

@powers

WIZ_WHO - Allows target to see sites ala wizard who NOFORCE - target an not be forced (except by immortal/#1) FREE_QUOTA - Allow target to have unlimited quota JOIN_PLAYER - Allow to 'join' a player's location NO_BOOT - Player can not be booted except by immortal/#1 STEAL - Player can give negative money TEL_ANYWHERE - Player can teleport anywhere STAT_ANY - Player can @search, @stat, or @find things HALT_QUEUE_ALL - Player can halt the queue SEARCH_ANY - Player can search for anything WHO_UNFIND - Player can see hidden player on WHO SHUTDOWN - Player can @shutdown the mush PURGE - Player can use /purge to @destroy and @nuke EXAMINE_FULL - Player can examine anything (not set NO_EXAMINE or cloaked) FORMATTING - @*formats allow passing what a person sees as %0, %1, etc CHOWN_ANYWHERE - Chown anything anywhere to yourself CHOWN_OTHER - Chown something you don't own to yourself EXAMINE_ALL - Examine other things (tiered) SEE_QUEUE_ALL - Player can see the full queue GRAB_PLAYER - Player can grab a remote player and pull them to location LONG_FINGERS - Player is granted remote control of things they own BOOT - Player can @boot SEE_QUEUE - Player can see advanced queue features TEL_ANYTHING - Player can @teleport anything PCREATE - Player can @pcreate players NOWHO - Allows the use of @hide HALT_QUEUE - Allows halting queue by specified bitlevel SECURITY - Allows setting NOMOVE NO_TEL SLAVE NO_YELL WRAITH - Allows bypassing exit locks HIDEBIT - Hides your admin level from lower levels FULLTEL - Allows full immortal level teleportation EXEC-SCRIPT - Allows executing external scripts in ~/game/scripts

@depowers

WALL - Disables the ability to @wall LONG_FINGERS - Disables remote access to things STEAL - Can not steal money CREATE - Can not create anything WIZ_WHO - Can not access wizard who CLOAK - Can not wizard cloak BOOT - Can not boot PAGE - Can not page FORCE - Can not @force/@sudo LOCKS - Can not pass locks COMMAND - Can not execute any $command (including master room) MASTER - Can not use any master room $command EXAMINE - Lowers or disables the ability to examine/decompile NUKE - Can not nuke, toad, or turtle FREE - No longer has free money for anything OVERRIDE - No longer can override anything TEL_ANYWHERE - No longer can teleport anywhere TEL_ANYTHING - No longer can teleport anything other than themselves POWER - Can no longer use @power MODIFY - Can not modify things CHOWN_ME - Can not chown anything to themselves CHOWN_OTHER - Can not chown anything to others ABUSE - Can not use $commands on anything they do not own UNL_QUOTA - No longer has infinite quota SEARCH_ANY - Disables the ability to @search/@find things GIVE - Disables ability to give things/money RECEIVE - Disables the ability to recieve things/money NOGOLD - Limits (or disables) how much gold someone can give NOSTEAL - Can not give negative gold PASSWORD - Can not change password MORTAL_EXAMINE - drops examine and all fetching to mortal only PERSONAL_COMMAND - Disables all $commands on anything they own

Site Restrictions

These are accessable via the @admin command, and the following options are allowable.

You may see all site information at any time with: @list sites

IP based restrictions

You may use CIDR notation such as /32 instead of 255.255.255.255. Config file: (see section on forbid_site as it describes and gives examples) Online Syntax: MASK:

```
                @admin forbid_site=123.123.123.0 255.255.255.0
                @admin forbid_site=123.123.123.123 255.255.255.255

   CIDR::

                @admin forbid_site=123.123.123.0 /24
                @admin forbid_site=123.123.123.123 /32

   REMOVING: MASK::

                @site/all 123.123.123.123=255.255.255.255
                @site/forbid 123.123.123.0=254.255.255.0

         CIDR::

                @site/all 123.123.123.123=/32
                @site/forbid 123.123.123.0=/24

forbid_site      - Set the specified site forbid only
register_site    - Set the specified site register only
noguest_site     - Set the specified site unable to connect to guests
suspect_site     - Set the specified site suspect on connect
noautoreg_site   - Set the specified site to not allow autoregistration
trust_site       - Allow site to bypass suspect site restrictions
```

```
permit_site       - Allow site to bypass sitelock restrictions
nodns_site        - Site will no longer do reverse DNS lookups
noauth_site       - Site will no longer do AUTH ident lookups
```

DNS based restrictions

These allow globbing wildcard matches. The advanced feature is you can specify filtering on when the condition is matched, such as allowing 2 players from a site to be connected before disallowing anyone else to connect. Config File: (see section on forbid_host as it describes and gives examples) Online Syntax:

```
        ADD:      @admin forbid_host=*.dsl*.comcast.net *.aol.com *another.
↪site
        DEL:      @admin forbid_host=!*.aol.com
        ADVANCED: @admin forbid_host=mudconnect.com|3 (allow 3 at once only)

forbid_host       - Set the specified site(s) forbid only
register_host     - Set the specified site(s) register only
noguest_host      - Set the specified site(s) unable to connect to guests
suspect_host      - Set the specified site(s) suspect on connect
noautoreg_host    - Set the specified site(s) to not allow autoregistration
validate_host     - Do not allow any autoregistration from emails matching site
goodmail_host     - Always allow autoregistration from emails matching site
nobroadcast_host  - Snuff online site broadcasts via MONITOR for specified␣
↪site
```

1.8.3 Methods to block anonymous connections and the pros and cons of doing so

Now let's assume you have some troll attempting to use proxies to connect. There's multiple ways to stop this.

Blacklisting through external tor_pull.sh script

In ~/Rhost/Server/game you will see a script called tor_pull.sh Execute this by running (from the game directory) ./tor_pull.sh This populates the blacklist with registered proxies from various sites on the internet. If you want specified ip's added, feel free to add them at the end of this file.

Blacklisting through internal @blacklist command

On the mush, have as part of your startup @blacklist/load This will load in the generated blacklist file for automatic forbid sites based on the ip.

Blacklisting through internal @tor command

@tor. Please see 'wizhelp tor' on how to set this up. It in effect will actively block all known exit nodes for TOR's annonymous proxy service. It self-updates and will actively block TOR connections.

Blacklisting through internal @admin command

@admin proxy_checker (please see wizhelp) This little doodad uses MTU checking against packet size which will detect most methods of proxies. Sadly, this also has false positives because some situations require a differentating MTU value such as briged network connect with things like cloud services, docker, or similar encapsulated network services. However, this option has several settings from just monitoring/alerting of possible proxies to downright forbidding them. If you're being actively attacked, it may be worth considering adding this to add additional protection.

1.8.4 Setting up an SSL tunnel for secure connection options

Quickstart for SSL setup with stunnel

1. Modify your netrhost.conf file and add/change the following parameters:

    1. stunnel_reip 1

    2. stunnel_cmd SECRET-MAGIC-COOKIE

        1. SECRET-MAGIC-COOKIE is a case sensitive single word phrase. Any printable character other than the '#' character is allowable. You may use up to 30 characters.

        2. Make sure the secret is a hard to guess phrase. This is used by stunnel to forward on the originating IP address.

    3. stunnel_host localhost 127.0.0.1 othersite.goes.here

        1. This is optional.

        2. If you do not specify it it defaults to 'localhost 127.0.0.1'. If your domain has a unique name like 'localhost.localdomain' like some ubuntu distributions, then you should customize your stunnel_host.

2. go into the stunnel directory

3. ./stunnel_setup.sh

    1. Choose the defaults or alter them based on preferences

    2. Make sure to choose the warpbubble conf file

4. ./stunnel_start.sh

5. Use ./stunnel_stop.sh to stop the SSL tunnel at any time

You do not need to shutdown the ssl handler if you shutdown the mush. They are entirely separate processes.

Detailed SSL setup with stunnel

To setup SSL connectivity, we use the STUNNEL application to tunnel SSL to the mush. This acts a bit like a man in the middle but remains controlled by the game owner which would have access to the end point anyway.

Note: it is assumed you will have already initially set up your netrhost.conf.

stunnel directory

You would set up the stunnel from the 'stunnel' directory. There the following files are of relevance:

README – a readme explaining the points of stunnel stunnel.conf.example – The example stunnel.conf file. If you wish to create this manually you're welcome to. Just make sure the end file is stunnel.conf stunnel_setup.sh – the script to build a stunnel.conf file for you which will be dropped at your specified location. stunnel_kill.sh – Stop/terminate the stunnel process. stunnel_start.sh – Start the stunnel process. warpbubble.pl – the perl script that handles stunnel to mush connectivity. stunnel_src – If you do not have stunnel, this directory will allow you to download, compile and locally install.

Modifying netrhost.conf

To be able to utilize SSL, you first must set your netrhost.conf file with the relevant information to enable SSL connectiions. These three config options must be set to be able to use SSL, however, sconnect_host if not set will default to 'localhost 127.0.0.1'.

sconnect_reip 1 – This enables the SSL tunnel layer handler within rhost. sconnect_cmd XYZZY – this will set the secret SSL command handshake command to XYZZY. This is case sensitive and can be up to 31 characters. Please make sure to only use printable non-whitespace characters. Ergo: one word sconnect_host wildcards – This allows wildcarded sites (one or more) to allow to access the sconnect/stunnel handler. This defaults to 'localhost' and '127.0.0.1' so if you have 'localhost.localdomain' instead then you must set this to whatever is seen as 'localhost' to you. You can verify this by checking your /etc/hosts file.

Note: the sconnect_host is optional. If you do not specify it, it will default to two values: 'localhost' and '127.0.0.1'.

Running the stunnel setup program

At this point you're ready to run the stunnel setup program. So at this point type the following:

```
./stunnel_setup.sh
```

This will prompt you through settings. Most you can select the defaults to. The SSL port you may need to change based on your administrative requirements. It will prompt you with whatever you set for your mush name. If you have not selected a mush name at this point, you can select the defaults.

You will want to use the config file for warpbubble as this hides the secret.

Be aware that if you have DNS host lookups disabled on your mush, you MUST have 127.0.0.1 as an entry for your sconnect_host file.

Starting the stunnel proxy

When you have your stunnel.conf file to the way you want, you then issue the following command to run your SSL layer:

```
./stunnel_start.sh
```

Shutting down the stunnel proxy

If ever you need to bring down the SSL layer, you may kill it with the command:

```
./stunnel_stop.sh
```

Configuring firewall on the host

Please be aware that the port that the SSL layer is on must be opened in any firewall rule you specified to allow the connectivity. This also must not be the port the mush is running on and requires a separate port.

1.9 Maintenance

1.9.1 Signals and why you need them for control

Rhost by default allows signals at the shell to handle various processes in-game.

The following signals are useful.

TERM (kill -TERM or kill -15)

- This will immediately terminate the mush, dumping a special flatfile called netrhost.db.TERM and scramming the db in question by force-closing it without any writes. A TERM is the effort for the mush to shut down the mush as fast as possible to avoid any db corruption if possible since a TERM signal is common during a server shutdown, so time is paramount.

USR1 (kill -USR1)

- This by default issues a reboot on the server. This is a special parameter because this can actually be changed in-game to do any number of other things. Please refer to the RhostMUSH running in question if this is the default behavior or if the method for USR1 is doing something else.

USR2 (kill -USR2)

- This will shutdown (cleanly) the mush. This behaves as if you issued a @shutdown from within the game, and follows all proper procedure in bringing the game down cleanly and safely. This shoudl be used when doing maintenance on the game or if you need to bring it down from the shell.

KILL (kill -KILL or kill -9)

- This signal can not be caught and will immediately terminate the game without any safty to the database at all. Short of something horribly wrong going on, this should never be used to bring down your mush. Doing so will almost certainly corrupt your databases (ALL OF THEM) that are open, including but not limited to your main database, your mail database, your autoregistration database, and so forth. So if you do this, plan to do some database recovery from your flat files. Also, when you bring down a mush in this manner, you need to issue Startmush -f to bring it back up.

1.9.2 Shutting down gracefully

Rhostmush has many ways to shut down the game cleanly

1. Log into the mush and issue @shutdown
2. Issue a kill -USR2 to the mush which issues an emergency @shutdown
3. Issue a kill -TERM to the mush which issues an emergency abort and clean shutdown.

WARNING: Never kill -9 Rhost

Under NO CIRCUMSTANCES should you kill -9 your mush unless you don't care for the database. The reason is if the mush happens to be saving, in any method, to the database, especially a QDBM database, you will likely have just corrupted your database, so pull out a flatfile to recover.

Sadly, this also may occur if the server hosting you takes a nose-dive in the middle of a db write. Rhost can recover corruption in-game while up, but if it bombs in the middle of a write, all bets are off. :)

1.9.3 Autoshutdown script

The makefile will 'make' the program that will STOP the mush. Please tweek 'autolog.h' with the proper parameters.

The 'startup.sh' will START the mush.

Both of these are intended to be used for automations (automated processes) like your rc.local file and/or startup scripts when you bring your server up.

1.9.4 Network Port redirector

This is a port redirector incase you decide to move your mush to a new site/port. To use, first, compile the code. To do this you would type the following:

    cc portmsg.c -o portmsg

if 'cc' is not defined, try the following:

    gcc portmsg.c -o portmsg

Once compiled, you would then modify the file 'file' to describe the mush, what was done, where it's moved to, then specify the IP address and the PORT where specified.

To launch the application, you would then type:

    ./portmsg file <port>

Where <port> is the port where the mush used to run at.

1.9.5 Using the built-in cron system for periodically running commands

Syntax for rhost.cron

The rhost.cron file will be in the syntax as follows:

username (or dbref#) command1;command2;command3;...;commandN command command command1;command2;command3;...;commandN

You can have commands strung together with a semicolon on the same line. This counts as a single line of input. You can have at most 20 lines of commands after the target you wish to execute the commands as. The target may be a player name OR a dbref# of any valid dbref# within the game. Invalid targets will abort the cron process. Non-printable characters in the cron file will abort the process. Any aborts or warnings will be logged in the netrhost.gamelog.

Here is a working example of the code cron file. This example will perform dumps of the mush.

Example syntaxt for rhost.cron

#1 @dump/flat; @@ dump the main game database to flatfile wmail/unload; @@ dump the mail database to flatfile @areg/unload; @@ dump the registration database to flatfile newsdb/unload; @@ dump the news bbs database to flatfile

1.9.6 The following scripts are used in the game directory

Startmush – used to Start up the mush backup_flat.sh – Used to run backups with @dump/flat within the game (Started with Startmush automatically) backup_restart.sh – Restart the backup_flat.sh if changes are done compress_logs.sh – Compress logs in 'oldlogs'. Ran with Startmush findit.sh – Internal script used to check for flatfile validity mailhide.sh – Wrapper to hide from address using the 'mail' progam minimal.sh – Auto-load the minimal db into the mush proxysnarf.sha – Internal script for the tor_pull.sh tor proxy blacklist tor_pullit.sh – Internal script for the tor_pull.sh for proxy blacklist recovery.sh – If your db is corrupt, run this to auto-revert to an earlier flatfile tor_pull.sh – Create a blacklist.txt file that can be loaded via the internal @blacklist command for proxy handling

1.9.7 Textfiles for RhostMUSH

areghost.txt - file player gets when autoregistration on registered host. autoreg.txt - file player gets when autoregistration on non-registered host. autoreg_include.txt - file player receives in email when they autoregister attached to login/passwd badsite.txt - file player gets when site is not allowed. connect.txt - file player gets when connect create_reg.txt - file player gets when their site is register and they can't create. doorconf.txt - file that is searched for information regarding @door.

Note: Need to mkindx doorconf.txt doorconf.indx for this file

---

down.txt - file player gets when the mush has logins disabled (@disable login) error.txt - the 'Huh? (type help for help)' messages.

Note: Need to mkindx error.txt error.indx for this file

---

full.txt - file player gets when the mush can't have any more players. guest.txt - file player gets when they connect as a guest. help.txt - your help file

---

Note: Need to mkindx help.txt help.indx for this file

---

motd.txt - your motd file news.txt - your news file

Note: Need to mkindx news.txt news.indx for this file

---

newuser.txt - file newly created players get when they connect for the first time. noguest.txt - file player gets when they are not allowed to connect to a guest. plushelp.txt - optional +help file. (needs compile time option)

Note: Need to mkindx plushelp.txt plushelp.indx for this file

---

quit.txt - file player gets when they disconnect. register.txt - file player gets when the site is locked down for registration. wizhelp.txt - your wizhelp file

---

Note: Need to mkindx wizhelp.txt wizhelp.indx for this file

---

wizmotd.txt - your wiz motd file

Textfile Frequently Asked Questions

Q: How do I put color in these files? A1: Look at ansi.h and you need to put the literal ASCII codes. They will look like: ^[[0m (for ANSI_NORMAL). That's <ESC>[A2: You can enable ansi_txtfiles then use %c (or %x/%m) encoding for ansi, however you compiled your Rhost.

Q: I want to design my own txt files to read in the mush. A: Easy. Design them like help.txt would be set up, mkindx the file, then you can access it via @dynhelp online.

Q: Do I have to mkindx these files whenever I make changes? A: Only the ones that have '& ' index. (help.txt, wizhelp.txt, news.txt, etc)

Q: Do I have to @readcache in the game whenever I make a change? A: Only when you modify any of the files listed in README.TXTFILES. Not the ones you use with @dynhelp.

Q: Can't I just make code in the mush that then is used for these silly txt files? A: Absolutely. Check 'wizhelp file_object'.

1.10 Troubleshooting

1.10.1 Stack limit and debugging

Rhost uses a stack limit in the debug monitor.

This stack limit is set to a reasonable amount of 1000. This is defined in the debug.h file in the hdrs directory.

This will directly impact the function_recursion_limit from being set above 100. If, for whatever reason, you really must have a ridiculously high recursion limit, then it is a suggestion to manually modify the stack limit in debug.h to a higher number.

We have reasonably set it to 10000 without too much issue, but keep in mind, the overhead is higher for every stack you throw on the process table. Higher stack means more memory used.

Also be aware that your shell stack limit directly is affected to this value.

Type: ulimit -a

This will show you your shell stack limits. Do NOT set the STACKMAX value higher than your shell's stack value.

The value in ~/Rhost/Server/hdrs/debug.h is currently set as:

#define STACKMAX 1000

Feel free to change this to a higher value if you wish.

The caveat. This effects the debug stack daemon. Meaning, the only way for this to be updated is through @shutdown and then a fresh ./Startmush.

A @reboot WILL NOT LOAD IN A NEW DEBUG MONITOR!!!!

You can issue @list stack to see the current stack ceiling ingame.

1.10.2 How to reset the password for #1

You can only use one of these options at a time. Make sure to change back your nerhost.conf after making the changes.

Method 1

in your netrhost.conf file add: newpass_god 777

This will reset #1's password to the default 'Nyctasia'.

Method 2

in your netrhost.conf file add: newpass_god 1

This will allow IMMORTAL players to @newpassword #1 upon reboot.

1.10.3 Troubleshooting difficulties compiling RhostMUSH

Changes to conf for high-bit CPUs

RhostMUSH automatically detects 64-bit platforms, and should compile cleanly on these.

In case you are trying to compile Rhost on some other crazy-wide CPUs such as the PS2, PS3 or other 128 or 256 bit CPUs, you can easily do so by changing a few lines of code in conf.c.

change: typedef unsigned int pmath1; typedef int pmath2; #define ALLIGN1 4

to: typedef unsigned long pmath1; typedef long pmath2; #define ALLIGN1 8

, replacing 8 with the size of your CPU's long integer. (4 for 32-bit, 8 for 64-bit, 16 for 128-bit, etc etc)

RhostMUSH has only been tested to work on the AMD64, but there is no reason to believe the same will not hold true for IA64.

Changes to autconf for certain systems

You should not have to worry about this, but incase something really weird occurs, you may need to look into these changes. . .

The autoconfig.h file needs to have modifications to it by hand.

There are three manual entries:

This one sets how it defines the int to character pointer. It's safe to keep it as 'unsigned int' for 32 bit platforms. For non 32-bit, define it to how an int is defined on that system.

    typedef unsigned int pmath1;

This one sets how it defines the signed int to character pointer. Same restrictions apply as above for unsigned int.

    typedef int pmath2;

This sets the allignment for the given platform. 4 represents a 32 bit platform. 8 would represent a 64 bit platform, etc. Change accordingly.

    #define ALLIGN1 4

Make sure these three entries are defined in your autoconf.h file else the mush will not compile.

1.10.4 Dealing with DB Corruption

Ok. Your database won't come up.

If you are reading this, then likely the scenerio is one of the following:

1. The mush says it can't find your database files.

2. The mush says it can't read or load your database files.

3. The mush seems to load fine but I can't log in anyone and when I do all the names and attributes of things seem to be gone!

4. Bringing up your mail database

First thing is first. Don't have a panic attack.

If the mush says it can't find your database files

Check the names of the database files in your 'data' directory

They should be named something like: netrhost.db netrhost.db.old netrhost.db.old.prev netrhost.gdbm.dir netrhost.gdbm.pag

And you may see a netrhost.db.flat

Check your netrhost.conf file

If you never touched the *database or muddb_name params, you should be good.

Verify your *database params (and muddb_name) are still set to 'netrhost' as part of the name. Ergo, the default values and you didn't change them. These should match up with the filenames in your data directory.

If these names do not match up, it can't find the database files to load. So you shouldn't have to change these names, ever. :)

Check your mush.config file

If you never modified this file, you should be good.

The gamename should be 'netrhost' for this file. This does NOT control the name of your game. This controls the name of all the files as associated to the mush. So changing this means the netrhost.conf file, all your database files, and so forth. Please don't change this :)

If the mush says it can't read or load your database files

Double check everything for the previous issue. Make sure everything is named properly.

Verify you have enough disk space. (quota)

Some account have a limited quota to run in. If you reached or exceed your disk quota, you can have a corrupted database. So always keep your eye on the size. quota -s to see a human readable format to see how much quota you have left. You want to make sure current in use is below the 'grace' and soft/hard limits shown. If not, you're out of space.

You will need to remove some files before you repair and bring up your mush again. Try to keep your quota at least 200 megs free to allow plenty of wonderful growth space for the mush.

Verify you have enough disk space. (system)

The second way you can run out of disk space is by the filesystem itself. do a df -h . in your 'game' directory'. That is df -h <period>. This will return how much disk space is being used and how much remains. If it shows 100% used, you're out of disk space and the db is corrupt.

At this point, you're pretty screwed. You can see if anything exists in your system to free up some space, but if the filesystem itself is filled, reach out to the owner of the server and let them know. It's a much bigger deal than just your mush if that's the case.

Until this issue is resolved, you can not repair and bring up your mush. No disk to run the game.

If the mush seems to load fine but I can't log in anyone and when I do all the names and attributes of things seem to be gone!

Ok, at this point you likely had your mush up when the physical server went down hard. Weither through an emergency shutdown or a physical power outage, your db likely was brought down hard during a write, so it left it in a corrupt state. These things happen. This is why we always strongly request you make daily flatfile dumps.

So, to recover your database.

The bad news

If you have no flatfile backup or never bothered with backups? I'm sorry, at this point you're SOA. There's no easy way to recover a corrupted binary database. If you absolutely need data out of it we may be able to help you to piece meal things out of it, but otherwise it's a lost cause. You'll have to start over from scratch. I'm sorry.

The good news

If you made backups, or if the server had a normal shutdown, you likely have a flatfile backup. You will see a netrhost.db.flat in either the 'data' directory or 'prevflat' directory. That is your manual flatfile backup.

If the server had a normal shutdown, you will see a file called netrhost.db.TERMFLAT. This is a scram-emergency db flatfile. It attempts to write this at the time of server shutdown to hopefully keep a clean backup in the case of issues since it identifies the server is coming down hard. Make sure if you plan to use the TERMFLAT as your recovery flatfile that the very last line shows something like ** END OF DUMP **. That shows you had a successful backup.

Now, to restore your database?

Please refer to the file 'README.DBLOADING'.

Bringing up your mail database

Your mail db may or may not come up at this point.

If after restoring main database your mail database works

If your mail database came up and does not show 'Mail: mail is currently off' then you should be good to go.

Please issue: wmail/fix wmail/lfix

This will put your mail system in sync with your current database and fix up any errors that may exist. wmail/fix fixes the mail, wmail/lfix loads in the fixes.

If after restoring main database your mail database does not work

If your mail database is not up and shows 'Mail: mail is currently off' then your mail db is currupt.

To fix your mail db please refer to file 'README.MAILCANNOTLOAD'

1.10.5 Dealing with a corrupt mail database

It says when you try to access mail that mail is disabled and/or off.

Nothing you do can bring it on line. Well, this is bad, but not horrible.

The mail db is totally separate from the main game database. This means that it in no way damaged or corrupted your main mush database.

The bad news? Yes. Your mail database is corrupt. To bring it back, is it hopes that you read ahead of time about how to backup your mush, which would include the mail database.

Backing up your mail database

wmail/unload – this flatfile dumps your mail db. You should run it daily.

To recover your mail, it assumes you have a mail flatfile in either the ~/Server/game/data directory or the ~/Server/game/prevflat directory. The latter directory is used in junction to the backup_flat.sh and will always house the latest flatfile if not one recently dumped in your data directory.

Automatically recovering your mail database

wmail/load

Yup, that's it. It'll take care of everything else. Isn't automation grand?

Doesn't even require a reboot :)

NOTE: You may at this point wish to run the following: wmail/fix – this fixes the mail database and sync's it to the mush db. wmail/lfix – this loads in the fixed mail database

If you have a very old mail database, this is likely going to be required to sync against nuked players and other changes to the game since the flatfile.

If this is a new db that you have, you can skip the fixing.

Manually recovering your mail database

To recover your mail manually, you need to delete your mail databases, reboot, then reload your mail flatfiles. If you have no mail flatfiles, well, you're going to have to start over with the mail database. Sorry.

First, go into the 'game' subdirectory. Inside that directory is a 'data' directory.

You will be deleting all the files with the following names:

RhostMUSH.mail.* (like RhostMUSH.mail.dir/RhostMUSH.mail.pag) RhostMUSH.folder.* (like Rhost-MUSH.folder.dir/RhostMUSH.folder.pag)

DO NOT DELETE OTHER NAMED FILES!!!

Once these files are deleted, you may issue a @reboot to restart the mush. This will unlock the mail system and load in a fresh db.

Now, if you have flatfiles of the old mail database, you will see in either the 'data' directory or the 'prevflat' directory files that are called:

RhostMUSH.dump.folder RhostMUSH.dump.mail

Make sure these two files are in the 'data' subdirectory. Copy them in if they exist in your 'prevflat' directory.

Once they are in the 'data' directory, within the mush type: wmail/load

This loads in the flatfile and recover the mail database.

Now, at this point the mail db may not be 100% in-sync with the game db.

So let's fix it.

wmail/fix – this will run a fix on the mail db and repair any issues.

wmail/lfix – this will load the fixed flatfile back into the mush.

At this point you should be good to go.

1.11 Upgrading

1.11.1 Converting database betwen GDBM and QDBM

Ok, if you plan to recompile your game that is using GDBM to QDBM, or visa versa some bad news.

The databases are NOT COMPATIBLE to each other, at least in the binary form.

Downgrading QDBM to GDBM

> **Warning:** I would NEVER change from QDBM back to GDBM, but if you're set on it these steps:
>
> You would use the same steps if you plan to move QDBM to GDBM. I however would not do this. Moving from QDBM to GDBM is a huge step backwards. Seriously, don't do it unless you have absolutely no other recourse.
>
> IF you plan (for whatever reason) to move from QDBM to GDBM, you should verify the following

1. You have on a 64 bit system, no object that has more than 400 attributes on it.
2. You have on a 32 bit system, no object that has more than 750 attributes on it.

3. Any CONTENT of any attribute must be below 4000 characters in length.

4. Once you have that done, you may follow the procedures below on converting (upgrade) from GDBM to QDBM. This works the same as converting (downgrading) QDBM back down to GDBM

Upgradging GDBM to QDBM

Now, if you've kept reading and plan to convert your GDBM database to QDBM great news! It's more stable, it's faster, and lets you have far more flexibility.

So, BEFORE YOU RECOMPILE YOUR CODE. This is what you have to do.

While logged in to your mush, issue the following commands

A. @dump/flat – This will make a flatfile dump of your MUSH database

B. wmail/unload – This will make a flatfile dump of your MAIL database

C. @areg/unload – If you use the AutoRegistration engine, this dumps it

D. newsdb/unload – If you use the hardcoded news/bbs engine. This dumps it

Verify the files exist

A. Server/game/data/netrhost.db.flat

B. Server/game/data/RhostMUSH.dump.folder Server/game/data/RhostMUSH.dump.mail

C. (Optional) Server/game/data/RhostMUSH.areg.dump

D. (Optional) Server/game/data/RhostMUSH.news.flat

Shutdown the MUSH

@shutdown your mush

From the Server directory

A. make clean

B. make confsource 1. Select QDBM and if you wish at this time increase your LBUF size 2. Select any other options you may want

C. (r)un and let it compile.

D. Main DB: Delete (rm) the following files (from Rhost/Server/game/data) netrhost.gdbm* netrhost.db netrhost.db.new netrhost.db.new.prev

E. Mail DB: Delete (rm) the following files (from Rhost/Server/game/data) RhostMUSH.folder.dir RhostMUSH.folder.pag RhostMUSH.mail.dir RhostMUSH.mail.pag

F. (Optional) AutoReg DB: Delete (rm) the following files (from Rhost/Server/game/data) RhostMUSH.areg.dir RhostMUSH.areg.pag

G. (Optional) News/BBS DB: Delete (rm) the following files (from Rhost/Server/game/data) RhostMUSH.news.dir RhostMUSH.news.pag

From the Server/game directory

A. ./db_load data/netrhost.gdbm data/netrhost.db.flat data/netrhost.db.new

B. ./Startmush

While logged into the mush issue the following commands

A. Load in the mail database wmail/load

B. (optional) Load in the autoreg database @areg/load

C. (optional) Load in the news/bbs database newsdb/load

Verify that you have QDBM running and your valid values

A. @list options system

B. @list options (spammy)

1.11.2 Updating RhostMUSH prior to 3.9.5p2

Ok.

So you're running an old RhostMUSH.

One prior to 3.9.5p2 and want to take advantage of the new format of the Makefile and the automated mysql stuff and all the other goodies that isn't really (easilly) done with just patch.sh.

Well, you're in luck. It is actually fairly easy to do.

This is what you have to do.

First thing's first.

1. Log into your existing mush. Let's make current backups of all your flatfiles. Issue: A. @dump/flat B. wmail/unload C. @areg/unload D. newsdb/unload

2. Shutdown your game (@shutdown)

3. Make an image of all your current backed up files. From The Server/game directory you would type:

   ```
   ./backup_flat.sh -s
   ```

   Please remember the '-s' to the ./backup_flat.sh.

4. Make note of the most recently created file in the directory Server/game/oldflat. It's usually named something like:

   ```
   RhostMUSH.dbflat1.tar.gz
   ```

   You will need this file later.

5. Rename your 'Rhost' directory to something else. This is the directory that you have containing the 'Server' directory. Name it anything you want other than 'Rhost'. For those not used to unix you would type:

   ```
   mv Rhost Rhost_old
   ```

6. Pull in the latest Rhost. You would type:

```
git clone https://github.com/RhostMUSH/trunk Rhost
```

You would type this in the same directory you have renamed your old 'Rhost' directory

7. go into the Rhost/Server directory. Type:

```
make confsource
```

Select what options you want (including the mysql and other goodies) then compile it (also within the menu, it's the 'r' option).

8 Once your game is compiled and ready to go you need to copy in the data from your old game. Copy the Rhost-MUSH.dbflat1.tar.gz we mentioned in step #4 to the Server/game directory of your NEW GAME DIRECTORY. From within the 'game' directory of your current game you should be able to issue (if you named the old one Rhost_old). Again this needs to be done FROM YOUR Server/game directory!!!

A. cp netrhost.conf netrhost.conf.orig

B. cp ../../Rhost_old/Server/game/RhostMUSH.dbflat1.tar.gz .

C. tar -zxvf RhostMUSH.dbflat1.tar.gz

D. Compare your current netrhost.conf to the default one that came with the source (that you renamed to netrhost.conf.orig). Likely the only sections you have to add to your current netrhost.conf (that came with your RhostMUSH.dbflat1.tar.gz archive), will be toward the end, with the include rhost_ingame.conf and rhost_mysql.conf. Depending on how old your game is coming from you may need to add more options. Any config option that is the same between the netrhost.conf files do not have to be copied over, and you want to keep your custom settings (like don't port or other stuff you have already customized).

E. Load in your flatfile information:

```
./db_load data/netrhost.gdbm data/netrhost.db.flat data/netrhost.db.new
```

F. Your ./Startmush should re-index all your txt files you originally made:

```
./Startmush
```

G. In your game type the following as an immortal or as #1.

1. Load in your mail flatfile:

```
wmail/load
```

2. Load in your autoregistration flatfile (if available):

```
@areg/load
```

3. Load in your hardcoded bbs flatfile (if available):

```
newsdb/load
```

9. You should be good to go on a current directory structure for Rhost. Enjoy!

1.11.3 Adding MySQL to RhostMUSH older than 3.9.5p2

MySQL is now native in RhostMUSH as of 3.9.5p2.

Warning: To autodetect it, YOU MUST HAVE mysql_config installed and running on your server. Without this, even if you have mysql db installed it won't be able to recognize the parameters you will need for it and will thus fail. Please check your linux distribution to see what packages are needed to install mysql_config.

Download the git repository to a seperate directory so that you can copy over the files that it requires you to.

Suggestion: git clone https://github.com/RhostMUSH/trunk ~/tmprho

If you are patching UP from an older version, you need to update the following files:

1. update your src/Makefile to the one in the 3.9.5p2+ repo (cp ~/tmprho/Server/src/Makefile ~/Rhost/Server/src/Makefile)

2. update your bin/asksource.* files to the one in the 3.9.5p2+ repo (cp ~/tmprho/Server/bin/asksource.* ~/Rhost/Server/bin/)

3. append 'include rhost_mysql.conf' BEFORE the rhost_ingame.conf file and before the section that says 'define local aliases' toward the end of your netrhost.conf file. (edit your ~/Rhost/Server/game/netrhost.conf file)

4. copy the game/rhost_mysql.conf file from the 3.9.5p2+ repo (cp ~/tmprho/Server/game/rhost_mysql.conf ~/Rhost/Server/game/)

5. The following lines have to be REPLACED/CHANGED in local.c (toward the top): (you may edit this or copy the one from the other distro) (do either: edit ~/Rhost/Server/src/local.c) (or: cp ~/tmprho/Server/src/local.c ~/Rhost/Server/src/local.c)

Note: IF REPLACING/CHANGING local.c COPY BELOW

```
/* Called when the mush starts up, immediatly prior to the main game
 * loop being entered. By this point all databases are loaded and
 * all variables configured.
 */
#ifdef MYSQL_VERSION
   extern void local_mysql_init(void);
   extern int sql_shutdown(dbref player);
#endif

#ifdef SQLITE
   extern void local_sqlite_init(void);
#endif /* SQLITE */

void local_startup(void) {
#ifdef SQLITE
   local_sqlite_init();
#endif /* SQLITE */
#ifdef MYSQL_VERSION
   local_mysql_init();
#endif
   load_regexp_functions();
}

/* Called immediatly after the main game loop exits. At this point
```

```
* all databases and variables are still configured
*/
void local_shutdown(void) {
#ifdef MYSQL_VERSION
   sql_shutdown(-1);
#endif
}
```

6. Issue 'make clean' then make confsource to rebuild using the latest builder script to build in the mysql changes.

1.12 Advanced Features

1.12.1 Adding hardcoded modules

RhostMUSH does support module writing.

Modifying sourcode to add a module

This requires hooking your changes into local.c, then modifying the Makefile (in the src directory) for any new source files that you wish to add.

Something to be aware of is that all localized data is ran after the system cache subroutine.

Adding an @startup to make use of modules

This means that if your code is depending on @startups, you need to put a delay in the @startup so that your local code can be loaded in as modules prior to the @startup execution.

Something that will not work:

@startup me=@superhappyfuncommand loadmeup=now

A small alteration that will likely make this work fine.

@startup me=@wait 1=@superhappyfuncommand loadmeup=now

That 1 second delay for the queue will give the game engine time to load in your module code.

Contributing your module back to Rhost

If you wish your modules to be part of the main Rhost distribution you have two options:

1. Attempt to hack the bin/asksource.sh and bin/asksource.blank files.

2. Ask one of the Rhost devs to do it for you :)

1.12.2 Shutting down gracefully

Rhostmush has many ways to shut down the game cleanly

1. Log into the mush and issue @shutdown

2. Issue a kill -USR2 to the mush which issues an emergency @shutdown

3. Issue a kill -TERM to the mush which issues an emergency abort and clean shutdown.

WARNING: Never kill -9 Rhost

Under NO CIRCUMSTANCES should you kill -9 your mush unless you don't care for the database. The reason is if the mush happens to be saving, in any method, to the database, especially a QDBM database, you will likely have just corrupted your database, so pull out a flatfile to recover.

Sadly, this also may occur if the server hosting you takes a nose-dive in the middle of a db write. Rhost can recover corruption in-game while up, but if it bombs in the middle of a write, all bets are off. :)

1.12.3 Reality levels

Reality levels are a means to forbid (or allow) interaction between objects in the same location.

Visibility

Each object (player, room, exit, thing) has two lists of reality levels. An Rx list, which describe what it can see and a Tx list, which describe where it can be seen. Those are bitfields. In order for X to see Y a bitwise 'and' is performed between X's RxLevel and Y's TxLevel. If the result is not 0, then X sees Y. If the result is 0, as far as X is concerned, Y doesn't exist. This affects contents lists, exit lists, look, say, pose, @emit, @verb, connect/disconnect, has arrived/has left messages, exit and object matching. 'here' and 'me' match always. It doesn't affect @remit, @pemit, page, WHO or channels. By default, all new objects are created with an RxLevel of 1 and TxLevel of 1. Rooms are an exception, created with an RxLevel of 1 and a TxLevel of 0xFFFFFFFF. Those default levels can be changed with configuration parameters. An object is always visible to itself, even if its Rx and Tx levels don't match. (See examples below)

Descriptions

For every reality level defined, you can define an attribute that serves as description. If you look at something and match more than one of its TxLevels, you'll see all the corresponding descriptions on the target object. If the object doesn't have any descriptions for the matching levels, you'll see the regular @desc. The @adesc attribute on the target is only triggered if the target can see the looker in turn. It's only triggered once, no matter how many descs the looker sees. The @odesc is shown only to those people that see /both/ the looker and the target. Through extension, @afail/@ofail and similar pairs (@adrop/@odrop, @asucc/@osucc etc) work in the same way. @verb commands are similary affected. Softcoded commands are only matched on the objects that can see the player. The player doesn't have to see the object. This includes commands in the Master Room. Exits are treated specially. In order to be able to use an exit name (or to use the 'move <exit>' command) the exit must be visible to the enactor. In order to pass through the exit, the exit must see the enactor in turn. There are reasons for this, which will become evident in the examples below.

Configuration parameters

A few configuration parameters have been introduced to deal with the reality levels.

> reality_level <name> <value> [<desc attribute name>]

This directive can only be used in the config file (not with the @admin command) and should be repeated for each reality level you want to define. It defines a new level named <name> with a bitvalue of <value> and an optional desc attribute. There is a limit of 8 characters on <name>, a 32-bit value on <value> (basically an unsigned long) and 32 characters on the attribute name. A maximum of 32 reality levels can be defined.

> def_exit_tx <value> def_exit_rx <value> def_room_tx <value> def_room_rx <value> def_player_rx <value> def_player_tx <value> def_thing_rx <value> def_thing_tx <value>

These 8 directives define the default reality levels of newly created objects. They can be set in the config file or with the @admin command. Like above, <value> must be a decimal number.

> wiz_always_real <0|1>

If this parameter is set to 1 then wizards (and immortals on Rhost) will see everything and will be visible to everyone. Their effective Rx and Tx levels will always be 0xFFFFFFFF. Also settable in the config file and with the @admin command.

Compile with -DREALITY_LEVELS compile time option to enable 'Real' needs to be '1' This is an example file only to be added to the mush.conf file Format: reality_level <8 char name> <hex-byte-mask> <optional-desc: DESC default>

Example mush.conf

reality_level Real 1 reality_level Obf1 2 reality_level Obf2 4 reality_level Obf3 8 OBFDESC reality_level Obf4 16 OBFDESC reality_level Obf5 32 OBFDESC reality_level Obf6 64 OBFDESC reality_level Obf7 128 OBFDESC reality_level Obf8 256 OBFDESC reality_level Obf9 512 OBFDESC reality_level Obf10 1024 OBFDESC reality_level Umbra 2048 UMBRADESC reality_level Fae 4096 FAEDESC reality_level Shadow 8192 SHADOWDESC reality_level Spy 16384 reality_level Death 32768 DEATHDESC reality_level All 4294967295

Commands

Two wiz-only commands are used to set the reality levels of an object.

> @rxlevel <object>=<list> @txlevel <object>=<list>

<list> is a space-separated list of level names that have to be set on the object. If a level name is prefixed with an exclamation mark (!) that level will be cleared from the object. WARNING: Changing the Tx levels of an object might make it invisible to you. In this case, you can still manipulate it by using his #dbref (or *player for players).

Functions

There are five functions that deal with reality levels.

> hasrxlevel(<object>,<level>) hastxlevel(<object>,<level>)

These two functions check if an object has the specified Rx or Tx level. You must control <object>. They return 0 or 1 and #-1 in case the object does not exist or you don't have permissions.

> rxlevel(<object>) txlevel(<object>)

These two functions return a space-separated list of the object's Rx or Tx levels. Again, you must control the object.

> cansee(<obj1>,<obj2>)

A wiz-only function, returns 1 of <obj1> can see <obj2> from a reality levels point of view. It doesn't check if the objects are in the same location, the DARK/CLOAKED flags and so on. Just <obj1>'s Rx level against <obj2>'s Tx level. WARNING: If you are using it on MUX2.0 with /both/ reality levels and Wod Realms enabled, the function will perform both checks and the Wod Realms version checks against the DARK flag.

Example 1: A simplified Witchcraft setup

In Witchcraft, besides the various Gifted classes, characters can be spirits There are spirit realms to which the mundane can not travel. Therefore we will use 2 reality levels: Real and Ghost. Since some spirits can become solid for a limited period of time, we will also use an additional desc for the Ghost level, called GHOSTDESC. Therefore in the config file we will have:

> reality_level Real 1 reality_level Ghost 2 GHOSTDESC

Ghosts can pass through most mundane locks, so the exists should allows the ghosts to pass:

> def_exit_rx 3

Note that def_exit_tx isn't set. Why? Because ghosts see the mundane world anyway, so a spirit character will have:

> @txlevel <player>=!Real Ghost @rxlevel <player>=Real Ghost

Let's assume 3 players: John is a Mundane. He won't see spirits. John's Rx: Real John's Tx: Real John's @desc: This is John. John's &GHOSTDESC: (Not important, since it's never visible) Johh's @adesc: %N has looked at you. John's @odesc: has looked at John.

Jack is a Gifted. He will sense spirits, but is still made from flesh and blood so visible to mundanes. Jack's Rx: Real Ghost Jack's Tx: Real Jack's @desc: This is Jack. Jack's &GHOSTDESC: (Not important, since it's never visible) Jack's @adesc: %N has looked at you. Jack's @odesc: has looked at Jack.

Frank is a ghost. He will see other spirits as well as mundanes, but won't be visible to mundanes. He can also become visible to everybody. Frank's Rx: Real Ghost Frank's Tx: Ghost Frank's @desc: This is Frank, looking human. Frank's &GHOSTDESC: This is Frank's ghostly shape. Frank's @adesc: %N has looked at you. Frank's @odesc: has looked at Frank.

Following are commands that each of the players enter and what they see. I'll assume the +materialize command is defined like: &CMD_MATERIALIZE <cmdobject>=$+materialize:@txlevel %#=Real; @pemit %#=You are now material.

John | Jack | Frank

|

>l || A room || This is a bare room. || Contents: || Jack || Obvious exits: || Out <O> ||

|> l || A room | |This is a bare room. ||Contents: ||John Frank ||Obvious exits: ||Out <O> || |> l ||A room | |This is a bare room. ||Contents: ||John Jack ||Obvious exits: ||Out <O>

>l Jack || Jack |John has looked at you.|John has looked at Jack. This is Jack. || >l Frank ||| I don't see that here. ||

|>l Frank | |Frank |Jack has looked at you. |This is Frank's ghostly |shape. || |>l John |Frank has looked at |John |John. |This is John. ||>+materialize ||You are now material.

>l Frank || Frank |John has looked at |Frank has looked at you. This is Frank, looking |Frank. | human. ||

|>l Frank |

Jack has looked at |Frank |John has looked at you. Frank. |This is Frank, looking |

|human. ||This is Frank's ghostly| |shape. |

Example 2: A WoD setup

The reality levels will be defined like this: reality_level Real 1 reality_level Obf1 2 reality_level Obf2 4 reality_level Obf3 8 OBFDESC reality_level Obf4 16 OBFDESC reality_level Obf5 32 OBFDESC reality_level Umbra 64 UMBRADESC reality_level Fae 128 FAEDESC reality_level Shadow 256 SHADOWDESC reality_level All 511

5 levels of Obfuscation, Umbra, Dreaming, Wraiths. 'All' is a handy replacement for all levels, useful for wizards and wizobjects that should be visible on all levels. Also useful when you want to set an object's levels to something without knowing what he had before. @rxlevel #276=!All Real !All will clear all levels, then the object will gain the Real level. There is more than one Obfuscation level because of the relation between Auspex and Obfuscation. A vampire with Obfuscate 2, should not be visible by one with Auspex 1. However one with Auspex 3 should see another vampire with Obfuscate 1, 2 /or/ 3. Obfuscated players can move if they have Obf > 1. Umbral and Shadow players should also be able to see most of the exits. So the exits at creation should have default levels of Real + Obf2 + Obf3 + Obf4 + Obf5 + Umbra + Shadow = 1 + 4 + 8 + 16 + 32 + 64 + 256 = 381

> def_exit_rx 381 def_exit_tx 381

Obf1 is not included since an Obfuscated vampire should not be able to move if it only has Obf1. Therefore they won't see the exits. If you want them to be able to see the exits, but not to use them, change the default Tx of the exits:

> def_exit_rx 381 def_exit_tx 383

Joe the Mortal will have an RxLevel: Real and a TxLevel: Real Jack the Malk, who likes to walk around Obfuscated and has Obfuscate 2 will have an RxLevel: Real (he sees what the mortals see) but a TxLevel: Obf2 Jimmy the Nossie, who is using the Mask and has Obfuscate 4, but doesn't try to make himself invisible will have an RxLevel: Real (as Jack) and a TxLevel: Real Obf4. He will also set his @desc to what the mortals see and &OBFDESC to his real slimy desc. Simply put, he will be visible to mortals, but not with his real desc. Aldrin the Gangrel, has Auspex 4 and activates it. Therefore, his TxLevel will still be Real, but RxLevel: Real Obf1 Obf2 Obf3 Obf4 (all of them). So he can see Joe, Jack and Jimmy's both descs. Joe, on the other hand, won't see Jack at all. He will still see Jimmy, but only Jimmy's @desc, not the OBFDESC

Frida the Fae... will have RxLevel: Real Fae and TxLevel: Real Fae. @desc set to the mundane desc, &FAEDESC set to the Chimerical desc. Emily the Enchanted will have an RxLevel: Real Fae, but the TxLevel: Real. No &FAEDESC on her, although she'll be able to see it the one on Frida. Gil the Garou, while travelling through the Umbra, will have RxLevel: Umbra and TxLevel: Umbra. &UMBRADESC is his friend. He won't see mortals or other characters who are not in the Umbra. Barbie the Bastet, who's only peeking in the Umbra, without going there, will have RxLevel: Umbra, TxLevel: Real. Dangerous position since she can't see the things that see her. Deanna the Drake, who activates her spirit vision, will have RxLevel: Real Umbra and TxLevel: Real. She will see characters in Umbra and real world at the same time and perceive the desc appropiate to the realm the ohter character is in. Wanda the Wraith: RxLevel: Real Shadow, TxLevel: Shadow. Her @desc would be empty, but the &SHADOWDESC should be set. Marie the Mortal+ Medium: RxLevel: Real Shadow, TxLevel: Real

Global code objects that all characters should be able to use: RxLevel: All, TxLevel: All

Example 3: Softcode

Considering the config directives from example 2 and assuming a function getstat(<dbref>,<stat>) that will return the value of a player's stat from the sheet here are softcode examples that implement some of the WoD powers. In a real game you would have to use some more checks, of course.

@create Reality Levels Commands (RLS) &CMD_OBFON rls=$+obf/on:@switch [setr(0, getstat(%#,Obfuscate))]=0, @pemit %#=You don't have Obfuscate!, {@txlevel %#=!All Obf%q0; @pemit %#=You are now invisible.} &CMD_OBFOFF rls=$+obf/off:@txlevel %#=Real; @pemit %#=You are now visible. @@ Note: +obf/on clears all TxLevels before setting the appropiate Obf @@ This is necesary, because a character might advance from Obf2 to @@ Obf3 and he should be visible /only/ on the Obf3 level. @@ +obf/off simply sets the Real Tx level, without clearing the Obf. The @@ reason is the Mask. Players with Obf3 or higher who use the Mask should @@ +obf/on, then +obf/off after approval and everything is set. &CMD_AUSPEXON

rls=$+auspex/on:@switch [setr(0, getstat(%#, Auspex))]=0, @pemit %#=You don't have Auspex!, {@rxlevel %#=[iter(lnum(1, %q0), Obf##)]; @pemit %#=Auspex enabled.} &CMD_AUSPEXOFF rls=$+auspex/off:@switch [hasrxlevel(%#, Obf1)]=0, @pemit %#= You don't have Auspex enabled!, {@rxlevel %#=[iter(lnum(1, 5), !Obf##)]; @pemit %#=Auspex disabled.} &CMD_UMBRAENTER rls=$+umbra/enter:@rxlevel %#=!Real Umbra; @txlevel %#= !Real Umbra; @pemit %#=You are now in the Umbra. &CMD_UMBRALEAVE rls=$+umbra/leave:@rxlevel %#=Real !Umbra; @txlevel %#= Real !Umbra; @pemit %#=You left the Umbra. &CMD_PEEKON rls=$+peek/on:@switch hastxlevel(%#,Umbra)=1, {@rxlevel %#=Real !Umbra; @pemit %#=You are now peeking in the real world}, {@rxlevel %#=!Real Umbra; @pemit %#=You are now peeking into the Umbra} &CMD_PEEKOFF rls=$+peek/off:@rxlevel %#=!Real !Umbra [setinter(Real Umbra, txlevel(%#))]; @pemit %#=You are no longer peeking.

1.12.4 Execscript and external programs and scripts

Mush variables

Built in variables

Variable Description MUSH_PLAYER player dbref# MUSH_CAUSE cause dbref# MUSH_CALLER caller dbref# MUSH_OWNER owner of player dbref# MUSH_FLAGS space delimited list of flags on player MUSH_TOGGLES space delimited list of toggles on player MUSH_OFLAGS space delimited list of flags of player owner MUSH_OTOGGLES space delimited list of toggles of player owner MUSHL_VARS space delimited list of MUSH attributes from player

> This is passed from the mush's EXECSCRIPT_VARS attr

Dynamic variables

MUSHV_<arg> <arg> variable passed from MUSHL_VARS These are the attributes from EXECSCRIPT_VARS

Register variables

MUSHQ_<arg> setq registers 0-9 and a-z MUSHQN_<arg> labels that are assigned the setq vars MUSHN_<arg> The labels that were defined by any register

> **Note: they must be ASCII-7 clean and contain no** white spaces

set object

The script executed with execscript() will read in a file with the same name as the script ending in '.set'. This is a loader object that will set attributes and registers back into the mush that you wish to pass from the script. The fields are SPACE SEPARATED. The values are NOT evaluated.

The format of the fields are

Dynamic variables

VARNAME OWNER CONTENTS (or leave null to clear)

Examples

SEX #123 Male DESC #123 %r%tThis is a willow tree of unique description%r%rIt sways in the wind. RED #123 This is the color %ch%crred%cn. WIPETHISATTR #123 MULTILINE #123 This is a line that continues on because of the line feed (a control-M) on each line on the lines above

Register variables

REGISTER Q CONTENTS (or leave null to clear)

Examples (The last example clears register 0)

W Q This is stored in register W 1 Q This is stored in register 1 0 Q foo QN this sets register with label 'foo'

Example bash script

#!/bin/bash echo "This was called by player ${MUSH_PLAYER} that is owned by ${MUSH_OWNER}" echo "Displaying Registers:" regs="0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z" for list in ${regs} do

  eval echo "Register ${list}: ${MUSHQ_${list}}"

done echo "Displaying variables:" for vars in ${MUSHL_VARS} do

  eval echo "Variable ${vars}: ${MUSHV_${vars}}"

done

Notes and warnings

While MUSHL_VARS are sanitized on what is allowable as a mush variable, this is not necessarilly sanitized on what the calling script can fetch as a valid variable. Of note, you can not set environment variables that contain an equals sign. Be aware of this limitation.

Remember, MUSHL_VARS is the environment variable seen by the script. This is EXECSCRIPT_VARS on the mush itself, that is the attribute set on the target that contains the execscript() that is being executed.

Scripts to be used with execscript

account/ – Directory for execscripts relating to account creation compile39.sh – Script for patching and compiling RhostMUSH 3.9 compile.sh – Script for patching and compiling RhostMUSH config.sh – Script for setting compile time options for RhostMUSH debug.sh – Script for debugging RhostMUSH dict.sh – Script for querying a dictionary diff.sh – Script for querying differences between two arguments fortune.sh – Script for querying fortune program full-weather.sh – Script for querying a graphical weather forecast (alternative) git.sh – Script for querying git version of RhostMUSH hello.sh – Script for teaching execscript for 'Hello World' iostat.sh – Script for querying server stats of RhostMUSH jsonvalidate.sh – Python Script for validating JSON logsearch.sh – Script for searching throgh logfiles for RhostMUSH math_example.sh – Examples of math operations to be used with math.sh math.sh – Script for mathematical operations memory.sh – Script for querying memory usage of RhostMUSH mkindx.sh – Script for indexing RhostMSH helpfiles pastebinread.sh – Script for reading data from a pastebin URL pastebinwrite.sh – Script for writing data to a pastebin qspell.sh – Script for checking spelling (alternative) quota.sh – Script for checking disk quote and usage random.sh – Script for getting a random number roomlog.sh – Script for viewing logs in roomlog directory spell.sh – Script for checking spelling stats.sh – Script for querying server and process stats for RhostMUSH thes.sh – Script for adding a word to the dictionary for spell scripts tinyurl.sh – Script for shortening a URL weather.sh – Script for querying a graphical weather forecast web.sh – Script for querying an arbitary website

1.12.5 Using printf() for advanced text output

The function printf() in Rhost can be used to greatly reduce coding in efforts for outputs, screens and data display. It can automatically center, justify and wrap the text parameters given to it.

Example one

> @emit printf(|$-12s|$12s|^12s&14s$_12s|,a b c, d e f, g h i, wrap(lnum(20),12, l, |, |), j k l)

  |a b c | d e f| g h i |0 1 2 3 4 5 |j k l| |6 7 8 9 10 ||11 12 13 14 ||15 16 17 18 ||19 |

Example two

> **@emit printf($14&s $^4&s $-3&s $15&s,**

  iter(Bruised|Hurt|Injured|Wounded|Mauled|Crippled|Incapacitated,##,|,%R),   iter(|-1|-1|-2|-2|-5|,##,|,%r),iter(lnum(1,7),%[[if(gte(get(%#/damage),##),X,%b)]%],,%r), * Aggravated%RX Lethal%R/ Bashing)

   Bruised [ ] * Aggravated Hurt -1 [ ] X Lethal

   Injured -1 [ ] / Bashing Wounded -2 [ ]

    Mauled -2 [ ]

  Crippled -5 [ ]

 Incapacitated [ ]

Example three

> @emit [printf($-10|'''s$-60|''s,a b c d e f g h i j k l m n o p q r s t u v w x y z,

this is a test a groovy test blah blah blah [repeat(blah%b,100)])]END!

a b c d e this is a test a groovy test blah blah blah blah blah blah f g h i j blah blah blah blah blah blah blah blah blah blah blah blah k l m n o blah blah blah blah blah blah blah blah blah blah blah blah p q r s t blah blah blah blah blah blah blah blah blah blah blah blah u v w x y blah blah blah blah blah blah blah blah blah blah blah blah z blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah END!

1.13 Format for image files

The image format goes like this:

Data Type Example Description ——— ——– ——————————————————- INT 3 TYPE: room 0, thing 1, exit 2, player 3, zone 4, garbage 5 STRING Wizard NAME: of the target. Verbatum, no quotes surround it *INT 123 LOCATION: dbref# of the target. No prepending '#' used. *INT 234 CONTENTS: The first content in a linked list content table (-1 if none) *INT 345 EXITS: The first exit in a linked list exit table (-1 if none) *INT 0 LINK: This is the 'home' of the object or what it's linked to (-1 for none) *INT 123 NEXT: The next thing after this item for a content holder STRING #123 LOCK: The boolean string lock if it exists. (empty if no lock) *INT 1 OWNER: The dbref# owner of the target. For players same dbref as player. INT 789 PARENT: The parent of the target. (-1 if none) *INT 99999 MONEY: The int value of the money the players has. INT 194592 FLAGS1: The first word of flags (@set flags) on a player (see FLAGS) INT 194222 FLAGS2: The second word of flags (@set flags) on a player (see FLAGS) INT 199999 FLAGS3: The third word of flags (@set flags []) on a player (see FLAGS) INT 1582958 FLAGS4: The forth word of flags (@set flags []) on a player (see FLAGS) INT 159955 TOGGLES1: The first word of toggles (@toggle) on a player (see TOGGLES) INT 159958 TOGGLES2: The second word of toggles (@toggle) on a player (see TOGGLES) INT 159958 POWER1: The first word of powers (@power) on a player (see POWERS) INT 159958 POWER2: The second word of powers (@power) on a player (see POWERS) INT 159958 POWER3: The third word of powers (@power) on a player (see POWERS) INT 159958 DEPOWER1: The first word of depowers (@depower) on a player (see DEPOWERS) INT 159958 DEPOWER2: The second word of depowers (@depower) on a player (see DEPOWERS) INT 159958 DEPOWER3: The third word of depowers (@depower) on a player (see DEPOWERS) INT -1 ZONE(S): The list of zones starting here and ending with '-1'. (see ZONES) >STRING >VA ATTRIBUTENAME: Attribute name to store, starts with > identifier STRING Wheee ATTRIBUTECONTENTS: Contents of attribute. Multi-lines seperate with ^M (control-M) >STRING >Desc ATTRIBUTENAME: Another attribute to chain in STRING Ugly ATTRIBUTECONTENTS: Contents of the next attribute >STRING *Password PASSWORDATTRIB: Special password attribute. Attribute name is '*Password' STRING 6xy$xy PASSWORD-CONTENTS: The SHA512 password (if glibc 2.7+ supported on system) (see PASS) < < This is the marker to specify the end of the attribute contents. This is always the last line

NOTE: Any Data type starting with '*' is ignored when @snapshot/loading.

The structure above with the examples would look like this in the file:

3 Wizard 123 234 345 0 123 #123 1 789 99999 194592 194222 199999 1582958 159955 159958 159958 159958 159958 159958 159958 159958 -1 >VA Wheee >Desc Ugly >*Password 6xy$xy <

FLAGS: The following flags are to be used. They are BITWISE masks that you need to add together for the values tghat you apply

/* First word of flags / #define SEETHRU 0x00000008 / Can see through to the other side / #define WIZARD 0x00000010 / gets automatic control / #define LINK_OK 0x00000020 / anybody can link to this room / #define DARK 0x00000040 / Don't show contents or presence / #define JUMP_OK 0x00000080 / Others may @tel here / #define STICKY 0x00000100 / Object goes home when dropped / #define DESTROY_OK 0x00000200 / Others may @destroy

/ #define HAVEN 0x00000400 / No killing here, or no pages */ #define QUIET 0x00000800 /* Prevent 'feelgood' messages */ #define HALT 0x00001000 /* object cannot perform actions */ #define TRACE 0x00002000 /* Generate evaluation trace output */ #define GOING 0x00004000 /* object is available for recycling */ #define MONITOR 0x00008000 /* Process ^x:action listens on obj? */ #define MYOPIC 0x00010000 /* See things as nonowner/nonwizard */ #define PUPPET 0x00020000 /* Relays ALL messages to owner */ #define CHOWN_OK 0x00040000 /* Object may be @chowned freely */ #define ENTER_OK 0x00080000 /* Object may be ENTERed */ #define VISUAL 0x00100000 /* Everyone can see properties */ #define IMMORTAL 0x00200000 /* Object can't be killed */ #define HAS_STARTUP 0x00400000 /* Load some attrs at startup */ #define OPAQUE 0x00800000 /* Can't see inside */ #define VERBOSE 0x01000000 /* Tells owner everything it does. */ #define INHERIT 0x02000000 /* Gets owner's privs. (i.e. Wiz) */ #define NOSPOOF 0x04000000 /* Report originator of all actions. */ #define ROBOT 0x08000000 /* Player is a ROBOT */ #define SAFE 0x10000000 /* Need /override to @destroy */ #define CONTROL_OK 0x20000000 /* ControlLk specifies who ctrls me */ #define HEARTHRU 0x40000000 /* Can hear out of this obj or exit */ #define TERSE 0x80000000 /* Only show room name on look **/*

/* Second word of flags */ #define KEY 0x00000001 /* No puppets */ #define ABODE 0x00000002 /* May @set home here */ #define FLOATING 0x00000004 /* Inhibit Floating room.. msgs */ #define UNFINDABLE 0x00000008 /* Cant loc() from afar */ #define PARENT_OK 0x00000010 /* Others may @parent to me */ #define LIGHT 0x00000020 /* Visible in dark places */ #define HAS_LISTEN 0x00000040 /* Internal: LISTEN attr set */ #define HAS_FWDLIST 0x00000080 /* Internal: FORWARDLIST attr set */ #define ADMIN 0x00000100 /* Player has admin privs */ #define GUILDOBJ 0x00000200 #define GUILDMASTER 0x00000400 /* Player has gm privs */ #define NO_WALLS 0x00000800 /* So to stop normal walls */ #define REQUIRE_TREES 0x00001000 /* Trees are required on this target for attrib sets / / —-FREE—- 0x00002000 / / #define OLD_NOROBOT 0x00002000 /* #define SCLOAK 0x00004000 #define CLOAK 0x00008000 #define FUBAR 0x00010000 #define INDESTRUCTABLE 0x00020000 /* object can't be nuked */ #define NO_YELL 0x00040000 /* player can't @wall */ #define NO_TEL 0x00080000 /* player can't @tel or be @tel'd */ #define FREE 0x00100000 /* object/player has unlim money */ #define GUEST_FLAG 0x00200000 #define RECOVER 0x00400000 #define BYEROOM 0x00800000 #define WANDERER 0x01000000 #define ANSI 0x02000000 #define ANSICOLOR 0x04000000 #define NOFLASH 0x08000000 #define SUSPECT 0x10000000 /* Report some activities to wizards */ #define BUILDER 0x20000000 /* Player has architect privs */ #define CONNECTED 0x40000000 /* Player is connected */ #define SLAVE 0x80000000 /* Disallow most commands **/*

/* Third word of flags - Thorin 3/95 */ #define NOCONNECT 0x00000001 #define DPSHIFT 0x00000002 #define NOPOSSESS 0x00000004 #define COMBAT 0x00000008 #define IC 0x00000010 #define ZONEMASTER 0x00000020 #define ALTQUOTA 0x00000040 #define NOEXAMINE 0x00000080 #define NOMODIFY 0x00000100 #define CMDCHECK 0x00000200 #define DOORRED 0x00000400 #define PRIVATE 0x00000800 /* For exits only */ #define NOMOVE 0x00001000 #define STOP 0x00002000 #define NOSTOP 0x00004000 #define NOCOMMAND 0x00008000 #define AUDIT 0x00010000 #define SEE_OEMIT 0x00020000 #define NO_GOBJ 0x00040000 #define NO_PESTER 0x00080000 #define LRFLAG 0x00100000 #define TELOK 0x00200000 #define NO_OVERRIDE 0x00400000 #define NO_USELOCK 0x00800000 #define DR_PURGE 0x01000000 /* For rooms only. . . internal */ #define NO_ANSINAME 0x02000000 /* Remove the ability to set @ansiname */ #define SPOOF 0x04000000 #define SIDEFX 0x08000000 /* Allow enactor to use side-effects */ #define ZONECONTENTS 0x10000000 /* Search contents of zonemaster for $commands */ #define NOWHO 0x20000000 /* Player in WHO doesn't show up - use with @hide */ #define ANONYMOUS 0x40000000 /* Player set shows up as 'Someone' when talking */ #define BACKSTAGE 0x80000000 /* Immortal toggle for items on control **/*

/* Forth word of flags - Thorin 3/95 */ #define NOBACKSTAGE 0x00000001 /* Immortal toggle to control no-backstage */ #define LOGIN 0x00000002 /* Enable player to login past @disable logins */ #define INPROGRAM 0x00000004 /* Player is inside a program */ #define COMMANDS 0x00000008 /* Optional define for $commands */ #define MARKER0 0x00000010 /* TM 3.0 marker flags */ #define MARKER1 0x00000020 #define MARKER2 0x00000040 #define MARKER3 0x00000080 #define MARKER4 0x00000100 #define MARKER5 0x00000200 #define MARKER6 0x00000400 #define MARKER7 0x00000800 #define MARKER8 0x00001000 #define MARKER9 0x00002000 #define BOUNCE 0x00004000 /* That lovly TM 3.0 Bouncey thingy */ #define SHOWFAILCMD 0x00008000 /* Show failed $commands defauilt error */ #define NOUNDERLINE 0x00010000 /* Strip UNDERLINE character from ANSI */ #define NONAME 0x00020000 /* Target does not display name with look */ #define ZONEPARENT 0x00040000 /* Target zone allows inheritance of attribs */ #define SPAMMONITOR 0x00080000 /* Monitor the target for spam */ #define BLIND 0x00100000 /* Exits and locations snuff arrived/left */ #define NOCODE 0x00200000 /* Players may not code

/ #define HAS_PROTECT 0x00400000 / Player target has protect name data */ #define XTERMCOLOR 0x00800000 /* Extended AnSI Xterm colors */ #define HAS_ATTRPIPE 0x01000000 /* Attribute piping via @pipe // 0x02000000 free // 0x04000000 free // 0x08000000 free // 0x10000000 free // 0x20000000 free // 0x40000000 free // 0x80000000 free */

/* First word of toggles - Thorin 3/95 */ #define TOG_MONITOR 0x00000001 /* Active monitor on player */ #define TOG_MONITOR_USERID 0x00000002 /* show userid */ #define TOG_MONITOR_SITE 0x00000004 /* show site */ #define TOG_MONITOR_STATS 0x00000008 /* show stats */ #define TOG_MONITOR_FAIL 0x00000010 /* show fails */ #define TOG_MONITOR_CONN 0x00000020 #define TOG_VANILLA_ERRORS 0x00000040 /* show normal error msg */ #define TOG_NO_ANSI_EX 0x00000080 /* supress ansi stuff in ex */ #define TOG_CPUTIME 0x00000100 /* show cpu time for cmds */ #define TOG_MONITOR_DISREASON 0x00000200 #define TOG_MONITOR_VLIMIT 0x00000400 #define TOG_NOTIFY_LINK 0x00000800 #define TOG_MONITOR_AREG 0x00001000 #define TOG_MONITOR_TIME 0x00002000 #define TOG_CLUSTER 0x00004000 /* Object is part of a cluster */ #define TOG_SNUFFDARK 0x00008000 /* Snuff Dark Exit Viewing */ #define TOG_NOANSI_PLAYER 0x00010000 /* Do not show ansi player names */ #define TOG_NOANSI_THING 0x00020000 /* ... things */ #define TOG_NOANSI_ROOM 0x00040000 /* ... rooms */ #define TOG_NOANSI_EXIT 0x00080000 /* ... exits */ #define TOG_NO_TIMESTAMP 0x00100000 /* Do not modify timestamps on target */ #define TOG_NO_FORMAT 0x00200000 /* Override @conformat/@exitformat */ #define TOG_ZONE_AUTOADD 0x00400000 /* Automatically add FIRST zone in list */ #define TOG_ZONE_AUTOADDALL 0x00800000 /* Automatically add ALL zones in list */ #define TOG_WIELDABLE 0x01000000 /* Marker to specify if object is wieldable */ #define TOG_WEARABLE 0x02000000 /* Marker to specify if object is wearable */ #define TOG_SEE_SUSPECT 0x04000000 /* Specify who sees suspect in WHO/MONITOR */ #define TOG_MONITOR_CPU 0x08000000 /* Specify who sees CPU overflow allerts */ #define TOG_BRANDY_MAIL 0x10000000 /* Define brandy like mail interface */ #define TOG_FORCEHALTED 0x20000000 /* The item toggled can @force halted things */ #define TOG_PROG 0x40000000 /* Can use @program on other people/things */ #define TOG_NOSHELLPROG 0x80000000 /* Target can not issue commands inside a prog */

/* Second word of toggles – Ash */ #define TOG_EXTANSI 0x00000001 /* Specify if target can used extended ansi naming */ #define TOG_IMMPROG 0x00000002 /* Only an immortal can @quitprogram them */ #define TOG_MONITOR_BFAIL 0x00000004 /* Monitor if a failed connect on bad character */ #define TOG_PROG_ON_CONNECT 0x00000008 /* Reverse logic of program on connect */ #define TOG_MAIL_STRIPRETURN 0x00000010 /* Strip carrage return in mail combining */ #define TOG_PENN_MAIL 0x00000020 /* Use PENN style syntax */ #define TOG_SILENTEFFECTS 0x00000040 /* Silents did_it() functionality on target */ #define TOG_IGNOREZONE 0x00000080 /* Target is set to @icmd zones */ #define TOG_VPAGE 0x00000100 /* Target sees alias in pages */ #define TOG_PAGELOCK 0x00000200 /* Target issues pagelocks as normal */ #define TOG_MAIL_NOPARSE 0x00000400 /* Don't parse %t/%b/%r in mail */ #define TOG_MAIL_LOCKDOWN 0x00000800 /* Mortal-accessed mail/number and mail/check */ #define TOG_MUXPAGE 0x00001000 /* Have 'page' work like MUX */ #define TOG_NOZONEPARENT 0x00002000 /* Zone Child does NOT inherit parent attribs */ #define TOG_ATRUSE 0x00004000 /* Enactor can use Attribute based USELOCKS */ #define TOG_VARIABLE 0x00008000 /* Set exit to be variable */ #define TOG_KEEPALIVE 0x00010000 /* Send 'keepalives' to the target player */ #define TOG_CHKREALITY 0x00020000 /* Target checks @lock/user for Reality passes */ #define TOG_NOISY 0x00040000 /* Always do noisy sets */ #define TOG_ZONECMDCHK 0x00080000 /* Zone commands checked on target like @parent */ #define TOG_HIDEIDLE 0x00100000 /* Allow wizards/immortals to hide their idle time */ #define TOG_MORTALREALITY 0x00200000 /* Override the wiz_always_real setting */ #define TOG_ACCENTS 0x00400000 /* Accents being displayed */ #define TOG_PREMAILVALIDATE 0x00800000 /* Pre-Validate the mail send list before sending mail */ #define TOG_SAFELOG 0x01000000 /* Allow 'clean logging' by the player */ #define TOG_UTF8 0x02000000 /* UTF8 being displayed // 0x04000000 free */ #define TOG_NODEFAULT 0x08000000 /* Allow target to inherit default attribs */ #define TOG_EXFULLWIZATTR 0x10000000 /* Examine Wiz attribs */ #ifdef ENH_LOGROOM #define TOG_LOGROOMENH 0x20000000 /* Enhanced Room Logging */ #endif #define TOG_LOGROOM 0x40000000 /* Log Room's location/contents */ #define TOG_NOGLOBPARENT 0x80000000 /* Target does not inherit global attributes */

the fact.

/* First word of power positions. Each position is 2 bits so the number here is how far over to shift the 2 bit pattern */

#define POWER_CHANGE_QUOTAS 0 #define POWER_CHOWN_ME 2 #define POWER_CHOWN_ANYWHERE 4 #define POWER_CHOWN_OTHER 6 #define POWER_WIZ_WHO 8 #define POWER_EX_ALL 10 #define POWER_NOFORCE 12 #define POWER_SEE_QUEUE_ALL 14 #define POWER_FREE_QUOTA 16 #define POWER_GRAB_PLAYER 18 #define POWER_JOIN_PLAYER 20 #define POWER_LONG_FINGERS 22 #define POWER_NO_BOOT 24 #define POWER_BOOT 26 #define POWER_STEAL 28 #define POWER_SEE_QUEUE 30

/* Second word of power positions. */ #define POWER_SHUTDOWN 0 #define POWER_TEL_ANYWHERE 2 #define POWER_TEL_ANYTHING 4 #define POWER_PCREATE 6 #define POWER_STAT_ANY 8 #define POWER_FREE_WALL 10 #define POWER_EXECSCRIPT 12 #define POWER_FREE_PAGE 14 #define POWER_HALT_QUEUE 16 #define POWER_HALT_QUEUE_ALL 18 #define POWER_FORMATTING 20 #define POWER_NOKILL 22 #define POWER_SEARCH_ANY 24 #define POWER_SECURITY 26 #define POWER_WHO_UNFIND 28

/* Third word of power positions. / #define POWER_OPURGE 0 #define POWER_HIDEBIT 2 #define POWER_NOWHO 4 #define POWER_FULLTEL_ANYWHERE 6 #define POWER_EX_FULL 8 #define POWER_API 10 #define POWER_MONITORAPI 12 #define POWER_WIZ_IDLE 14 #define POWER_WIZ_SPOOF 16 / 18 free // 20 free // 22 free // 24 free // 26 free // 28 free // 30 free */

/* First word */ #define DP_WALL 0 #define DP_LONG_FINGERS 2 #define DP_STEAL 4 #define DP_CREATE 6 #define DP_WIZ_WHO 8 #define DP_CLOAK 10 #define DP_BOOT 12 #define DP_PAGE 14 #define DP_FORCE 16 #define DP_LOCKS 18 #define DP_COM 20 #define DP_COMMAND 22 #define DP_MASTER 24 #define DP_EXAMINE 26 #define DP_NUKE 28 #define DP_FREE 30

/* Second word / #define DP_OVERRIDE 0 #define DP_TEL_ANYWHERE 2 #define DP_TEL_ANYTHING 4 #define DP_PCREATE 6 #define DP_POWER 8 #define DP_QUOTA 10 #define DP_MODIFY 12 #define DP_CHOWN_ME 14 #define DP_CHOWN_OTHER 16 #define DP_ABUSE 18 #define DP_UNL_QUOTA 20 #define DP_SEARCH_ANY 22 #define DP_GIVE 24 #define DP_RECEIVE 26 #define DP_NOGOLD 28 #define DP_NOSTEAL 30 / Third word... and there was much rejoicing / #define DP_PASSWORD 0 #define DP_MORTAL_EXAMINE 2 #define DP_PERSONAL_COMMANDS 4 / 6 free / #define DP_DARK 8 / 10 free // 12 free // 14 free // 16 free // 18 free // 20 free // 22 free // 24 free // 26 free // 28 free // 30 free */

So entering zones if there are no zones: -1

Entering zones if it has three zones (#123, #456, and #789) 123 456 789 -1

As you see, the last value of the zone *MUST* be -1. This tells it that there are no more zones to add.

1.14 Comparison of Flags

ABODE - ABODE BLIND - BLIND CHOWN_OK - CHOWN_OK DARK - DARK FREE - FREE GOING - GOING/BYEROOM HAVEN - HAVEN INHERIT - INHERIT JUMP_OK - JUMP_OK KEY - KEY LINK_OK - LINK_OK MONITOR - MONITOR NOSPOOF - NOSPOOF OPAQUE - OPAQUE QUIET - QUIET STICKY - STICKY TRACE - TRACE UNFINDABLE - UNFINDABLE VISUAL - VISUAL WIZARD - ROYALTY ANSI - ANSI/ANSICOLOR PARENT_OK - PARENT_OK ROYALTY - COUNCILOR/ARCHITECT AUDIBLE - AUDIBLE BOUNCE - BOUNCE CONNECTED - CONNECTED DESTROY_OK - DESTROY_OK ENTER_OK - ENTER_OK FIXED - NO_TEL UNINSPECTED - Not Available - Just a marker flag HALTED - HALTED IMMORTAL - GUILDMASTER (You don't want IMMORTAL) GAGGED - FUBAR CONSTANT - NO_MODIFY LIGHT - LIGHT MYOPIC - MYOPIC AUDITORIUM - AUDITORIUM ZONE - Use @zone PUPPET - PUPPET TERSE - TERSE ROBOT - ROBOT SAFE - SAFE TRANSPARENT - TRANSPARENT SUSPECT - SUSPECT VERBOSE - VERBOSE STAFF - Not Available - Just a marker flag. SLAVE - SLAVE ORPHAN - Not Available - @lock/use the parent instead CONTROL_OK - Not Available - Use @lock/ZoneWizLock STOP - STOP (See also NOSTOP) COMMANDS - COMMANDS PRESENCE - Not Available - See: Reality Levels NOBLEED - Not Needed. Rhost doesn't bleed ANSI. VACATION - Not Available - Just a marker flag. HEAD - Not Available - Just a marker flag. WATCHER - Not Available - @toggle MONITOR HTML - Not Available - Rhost doesn't support Pueblo REDIR_OK - Not

Available - Rhost doesn't support @redirect SPEECHMOD - Not Available - Rhost doesn't support @speechmod - use @icmd MARKER0-MARKER9 - MARKER0-MARKER9

1.15 Comparison of powers

announce Can use the @wall command. Rhost Equiv: - FREE_WALL (@power)

boot Can use the @boot command. Rhost Equiv: BOOT (@power)

builder Can build, if the builder power is enabled. Rhost Equiv: ARCHITECT (flag)

chown_anything Can @chown anything to anyone. Rhost Equiv: CHOWN_OTHER (@power)

comm_all Like a wizard with respect to channels. Rhost has no hardcoded comsystem. You can tweek the softcode.

control_all Can modify any object in the database. (God-set only.) Rhost Equiv: TwinkLock (@lock)

expanded_who Sees the wizard WHO, and SESSION commands. Rhost Equiv: WIZ_WHO (@power)

find_unfindable Can locate unfindable people. see_hidden Can see hidden (DARK) players on WHO, etc. Rhost Equiv: WHO_UNFIND (@power)

free_money Unlimited money. Rhost Equiv: FREE (flag)

free_quota Unlimited quota. Rhost Equiv: FREE_QUOTA (@power)

guest Is this a guest character? Rhost Equiv: GUEST (flag)

halt Can @halt anything, and @halt/all. Rhost Equiv: HALT_QUEUE (@power) or HALT_QUEUE_ALL (@power)

hide Can set themselves DARK. Rhost Equiv: NOWHO (@power)

idle No idle timeout. Rhost Equiv: @timeout *player=-1

link_variable Can @link an exit to "variable". Rhost Equiv: Anyone can do this. VARIABLE (@toggle)

link_to_anything Can @link an exit to any (non-variable) destination. Rhost Equiv: @lock/link (@lock)

long_fingers Can get, look, whisper, etc from a distance. Rhost Equiv: LONG_FINGERS (@power)

no_destroy Cannot be @toad'ed. Rhost Equiv: INDESTRUCTABLE (flag)

open_anywhere Can @open an exit from any location. Rhost Equiv: @lock/open (@lock)

poll Can set the @poll. Rhost has nothing equivelant. Just softcode a +poll, or @hook it for permissions.

prog Can use @program on players other than themself. Rhost Equiv: PROG (@toggle)

search Can @search anyone. Rhost Equiv: SEARCH_ANY (@power)

see_all Can examine and see attributes like a wizard. Rhost Equiv: EXAMINE_FULL (@power) (and EXFULLWIZATTR (@toggle) for wiz only attribs)

see_queue Can @ps/all or @ps any player. Rhost Equiv: SEE_QUEUE (@power) or SEE_QUEUE_ALL (@power)

stat_any Can @stat any player. Rhost Equiv: STAT_ANY (@power)

steal_money Can give negative money. Rhost Equiv: STEAL (@power)

tel_anywhere Can teleport anywhere. Rhost Equiv: TEL_ANYWHERE (@power) or FULL_TEL (@power)

tel_anything Can teleport anything (includes tel_anywhere) Rhost Equiv: TEL_ANYTHING (@power)

unkillable Cannot be killed with the 'kill' command. Rhost Equiv: NOKILL (@power)

use_sql Can call the SQL() function. (God-set only.) Rhost Equiv: SQL is a 3rd party patch.

watch_logins Can set or reset the WATCHER flag on themselves. Rhost Equiv: MONITOR (@toggle)

1.16 RhostMUSH Internal Help Files

1.17 RhostMUSH Internal Wizhelp Files

1.18 Changelog

RhostMUSH 4.0 Update File MUX passwords didn't work properly because of a memcmp() bug.

- Thanks Locke

@nuke didn't properly wipe mail if issued from a non-player.

- Thanks Benzaiten & Rockpath

@protect set/unset the wrong flags.

- Thanks Rockpath

Help file typos fixed

- Thanks Rockpath

Bug in EVAL could overwrite static pointer to attribute fetches

- Thanks Ixokai

Bug in printf that could cause a SIGSEGV

- Thanks Ixokai

Bug in AUTH and API handling where AUTH lookups happened with internal checks

- Thanks Neil "Polk" Stevens

@set and set() now allow optionally setting contents starting with '_'.

- Thanks Gallifrey@BrazilMUX

Added better user error handling to the build script.

- Thanks qa'toq

Due to an insanely old bug in singleuser mode with attribute caps, flatfiles

   would cut off attributes at 750 on dbloading.

- Thanks Aqua@MuxNexus

@recover/detail to show attributes and details of recoverable item

- Thanks Ixokai

Suggestions in help files inspired from PennMUSH.

- Thanks PennMUSH (Raevnos)

@door/push could crash with non-players

- Thanks Xperta/Paige

Startmush had a confusing message for Nyctasia as #1's password

- Thanks Ixokai

@rxlevel/@txlevel handle bits as well as tabs

> • Thanks Myrddin

@fpose/nospace didn't work because of wrong bitwise flags

> • Thanks Myrddin

Potential crash with freeing unitialized buffering in trace stack in eval.c

> • Thanks Myrddin

Crash with trace located as a 32 byte SBUF if compiled for that

> • Thanks Myrddin

idle_timeout included in the netrhost.conf by default as highly utilized

> • Thanks skew

all l*() math functions allowed empty args for backward compatibility

> • Thanks skew

Found bug in lattr() with command matching.

> • Thanks Damascus

Bug in final sorting for setunion/setdiff/setinter.

> • Thanks Aqua

Duplicate entries possible with help suggestions.

> • Thanks Alley

Global parents (ancestors) should inherit from its own parents.

> • Thanks Matrix

parsestr() was missing a prefix handler for the | option.

> • Thanks Aqua

conf files didn't ignore spaces/blank lines

> • Thanks ELpH

Erraneous warning when vattr_cmds not defined

> • Thanks ELpH

Added ability to specify subdirectories in a controlled method via @admin for execscript()

> • Thanks Kumakun

Added optional target sender for mailsend()

> • Thanks Rockpath

Mysql would abort on sub-results if one of the results were NULL

> • Thanks Myrddin

libxcrypt broke SHA512 passwords. (Ubuntu 20+)

> • Thanks Darren

Typo in speech.c with a variable.

> • Thanks Oleo

SIDEFX permissions were borked for normal players.

> • Thanks jan6

#lambda wasn't case insensitive

> • Thanks Alley

> RhostMUSH 3.9.5 Update File

Softcode overrides for connect files

> • Thanks Matrix

Bug in the milisecond timers with regards to dumps

> • Thanks Matrix

Ansi auto-recognized in connect.txt (optionally)

> • Thanks Rook

floating point can dynamically be increased for precision.

> • Thanks Stephen

Ansi compression and optimization encoding

> • Thanks Exaurdon

Fix for timers with milisecond and alarms

> • Thanks Ol'Sarge

Fix for Mysql.c issue in a sigfault

> • Thanks Ol'Sarge

@depower didn't work right for inheritance on power_objects

> • Thanks Sunder

Buffer overrun in ansi_txtfile because of non-null termination.

> • Thanks Rook

mail/mark/save would not alert you if you hit MAX SAVED messages.

> • Thanks Mercutio

old_setq had an issue with '!' parameter not reusing registers.

> • Thanks Ixokai

missing test case for scandir() function fixed.

> • Thanks Maighdlin

suggestion to make textfile() more useful in functions.

> • Thanks qa'toq

alteration of new Makefile build procedure rebuilt based on Ternary@Dark Metal's suggestions.

> • Thanks Ternary/Ol'Sarge

fix to the src/Makefile to redefine default SHELL since latest Debian horked it with dash.

> • Thanks Mercutio

Make '.' as first char allowable in attribute names.

- Thanks Ixokai

@limit with unlimited values for @destroy and vlimit was broke.

- Thanks Ixokai

@decompile didn't show @toggles

- Thanks Tesagk

xinc() and xdec() didn't properly handle labels for registers.

- Thanks UnRegistered Guest (Wanted to be Anonymous)

columns() bug with left justification if fed null for field.

- Thanks Merit

@dynhelp/noindex to snuff the hilight index in @dynhelp.

- Thanks Darren

ltoggles()/hastoggle() didn't mirror lflags()/hasflag() for permissions.

- Thanks Polk

dark permission makes on-connect screen command ignored to be overridden.

- Thanks Ixokai

crashbug on random error messages if error.txt was empty

- Thanks Darren

compile issue when you do not have sideeffects enabled at comiletime

- Thanks benzaiten

Idea for /quiet for @pipe

- Thanks Ixokai

Missing showing PARIS mode enabled in WHO/DOING for @list options

- Thanks Myrddin

El Capitan 10.11.5 would not compile cleanly out of the box due to sudden header file location changes.

- Thanks Darren

Main Makefile no longer worked on latest FreeBSD because of their change from gmake.

- Thanks Oleo

Added RPAD and LPAD softcode wrappers

- Thanks Darren

Dark exits were broken with sees()

- Thanks Mercutio

objid's were based on localtime and not gmtime

- Thanks Fantom

Bug in safer_ufun with setting attributes on self and permissions with u().

- Thanks Mike/Talvo

Improvement of help entries for @label and various documentation fixes.

- Thanks Mike/Talvo

Added additional spacing to parenmatch() to help with pretty printing.

- Suggestion from Thenomain (thanks!)

&pageformat and &outpageformat idea from PennMUSH

- Thanks Mike and the PennMUSH folk :)

Added help entry for a suggestion on special characters.

- Thanks Tesagk

Added 'd' and 'D' options for wildcarding on editansi.

- Thanks Anixy

Removed attribute flags from @decompile/tf

- Thanks Darren

Potential crash bug with flag-handling with NONAME in use.

- Thanks Polk & Aqua

Missing free on an sbuf in sqlite.c

- Thanks Darren

Added %_<-> to pop last label used.

- Suggestion – Ixokai

Nested /notrace on @function/@lfunction was broke.

- Thanks Ixokai

Idea and general code for NO_CONNECT message – Kage

- Thanks Kage

Alternate date formats for convtime()

- Thanks Ixokai

Typos in help.txt

- Thanks Kilmoran

all localization didn't save state for register names.

- Thanks Myrddin

All locatization with CLEAR didn't wipe and reset register names.

- Thanks Myrddin

&SPEECH_PREFIX/&SPEECH_SUFFIX for say/pose pre and post processing.

- Thanks MuSoapBox (Auspice, Sparks, Seamus, faraday, Thenomain, and others)

] for @hook/ignore and @hook/permit was broken.

- Thanks Ixokai

 RhostMUSH 3.9.4 Update File

REALITY_LEVELS wouldn't compile because of undeclared function.

- Thanks Dahan

HELP spelling fixes

> • Thanks Sketch

compile time issue when enhanced ansi is deselected.

> • Thanks Wisdom

if you have an ssl library that conflicts with openssl dev libs, openssl support is confused

> • Thanks Wisdom

reality_compare – option to alter how descs are seen

> • Thanks Derek (from SVN site)

Crash bug in @blacklist/list fixed

> • Thanks Distraida

Bug in CPU alerting with new player creation on their first connect.

> • Thanks Darren@Nightlife

Bug with compiling without BANG support with undeclared variables.

> • Thanks Darren@Nightlife

You can now input extended ASCII right into the mush (and it converts to markup)

> • Thanks mindboosternoori

functions.c bombed with the clang compiler because of restrictive type-casting comparisons.

> • Thanks Fraibert

@include didn't properly null out args if forcefully specified null.

> • Thanks Volund

@skip/@ifelse, @switch, and @sudo didn't evaluate substitutions properly.

> • Thanks Volund

Compiletime bug in speech.c with REALITY_LEVELS not defined.

> • Thanks psc943

> RhostMUSH 3.9.3 Update File

@include – Idea Copied from Penn

> • Thanks Jules (and PennMUSH)

Fix for $Z in timefmt()

> • Thanks Chime/Loki (Haunted)

> RhostMUSH 3.9.2 Update File

@assert/@break didn't handle {} correctly.

> • Thanks Wyrd

singletime() handles (w)eeks, (M)onths, and (y)ears like MUX.

> • Thanks Chime & MUX2

crash bug in command.c with regards to mail handler

> • Thanks Chime

aliased rjust to rj and ljust to lj and updated help files appropiately.

> • Thanks Montague

glibc for MAX_INT/MIN_INT had issues with math functions - wrapper fixes this. parser issue with regexp, paren-thesis, and backslashes – Fixed

> • Thanks Chime

Idea for @titlecaption

> • Thanks Zero@NewJediOrder

IDLE had a missmatch on r and n parsing – Fixed

> • Thanks Mike@M*U*S*H

Discussion/Ideas for strdistance() function.

> • Thanks Sketch@M*U*S*H

RhostMUSH 3.9.1 Update File

Credits for any features should go here. All changes should go into the main help.txt file cluster_hasattr() bug for #-1 that should be 0 for non-existant attribs.

> • Thanks Ol'Sarge@Cajun

cluster_flags()/cluster_hasflag() added for cluster support

> • Thanks Cody

Fix for log.c C99 compile issues on old compilers.

> • Thanks Sombranox

sees() handles optional third argument for exits

> • Thanks Sombranox

#lambda inherited from parent wrongly - Fixed

> • Thanks Xandar

writable() added for TM3 compatability.

> • Thanks Wyrd

@list user_attrib now does flag based matching

> • Thanks sombranox

cluster_set() didn't evaluate attributes right

> • Thanks Cody

cluster_regrep*() didn't select the right proper target object

> • Thanks Cody

flag setting/notifying identifies if target was set/unset before

> • Thanks PennMUSH (Kimiko)

elist() didn't evaluate properly - Introduced 3.9.1p2

> • Thanks Cary

page alerts you if you're cloaked from people you page.

> • Thanks Wyrd

Added flatfile stale attribute cleaner and penn 1.8 flatfile converter

> • Thanks Wyrd

Added switch_search @admin param for switching functionality.

> • Thanks Minion

Added @include to Rhost

> • Thanks PennMUSH (Javelin)

@trigger can handle $command/^listen attributes

> • Thanks TinyMUSH3/PennMUSH

error.txt files can evaluate arguments

> • Thanks Camber/Orion

mux_lcon_compat added to allow lcon() to return empty string.

> • Thanks Minion

cluster_wipe added for clusters

> • Thanks Cary

NO_CODE broke global_error_obj as it's executed by enactor.

> • Thanks Matrix

Help file typos for various cluster commands.

> • Thanks Mike@M*U*S*H

RhostMUSH 3.9.0 p00 Update File —- Notes —-

v3.9 is the development branch leading to RhostMUSH v4.0 —- Changes —-

Fixed some mishandled signals which should not cause Rhost to panic shutdown. Added a Makefile define IG-NORE_SIGNALS to turn off signal handling entirely. Changed Makefile to use RFC date (date -R) instead of local datestring. Updated version() to allow showing build number by supplying an argument. Added signal handling of SIGUSR1, SIGTERM, SIGUSR2. Added user configurable SIGUSR1 handling through signal_object. Added zones_like_parents for zones to search like @parents.

> • this does require the ZONECMDCHK @toggle set on each item/player.

Modify snooplog to show site information. Added %@ support to parser (caller) - Penn/MUX/TM3 Added %+ support to parser (args sent to functions) - Penn Added %? support to parser (invocations) - Penn Added NO_CODE flag for easier control of coding tool avaiability Added full REGEXP support (based on Penn's PCRE implementation) Added some extra bounds checking to internal varabiables (non-issue)

[18-9] Added compatibility with @assert and @break for Penn Compat

> • PennMUSH

Added a QUIET switch to tel()

> • Leona @ Faetopia

[18-9] Modify snooplog to show site information. [18-10] lattr() modification to handle lock() shows. [18-11] lattr() modification to handle attribute flag checks. [18-11] examine/parent now shows dbref#'s of the targetted items [18-16] 7th argument to wrap() to allow last line to 'left justify' [18-18] Added %@ support (for Penn, TM3, and MUX compatibility)

- Lots and Lots and Lots of people.

Merged all 3.2.4 code to 3.9.0

- Ashen-Shugar

Added MUX, TM3, Penn, Rhost default options to asksource.sh Modified valid 'good characters' for starting attribs for MUX compat. Tprintf handler for buffering rewritten to be 'safe' - Lensman lnum/lnum2 added to allow 'stepping' argument. Reality locktypes 2&3 could be too restrictive, so some lax was given. Added reality locktypes 4 & 5 to duplicate 2 & 3 but with 'lock-pass-nonexit' @log allows writing to subdirectories. 5 depth maximum. @edit has /check argument to run a 'simulation' of an @edit. (Penn) @search has a /nogarbage switch to check against GOING/RECOVER items. moon() takes optional second argument (boolean) to show only percentage of phase @grep takes /regexp switch for regexp matching. Added] pre-parser command Rewrite of permission handler to allow a second permission structure (32 more permissions) @edit has /single argument to allow editing first match only. edit() has 4th optional argument to specify an edit of single match only. Change in WANDERER and GUEST to check owner as well as target. Added Good_chk() macro to include Good_obj() && !Going() && !Recover() Added eval/no_eval @admin permissions for function evaluation/non-evaluation. list() given 4th argument to handle optional header. Added /toreality switch to @pemit. (works only with contents) Vastly improved TinyMUSH3 converter. @hook modified to show sub-overrides and sub-includes Added the ability to pass delim and params to self-made %-subs. Added a new @admin boolean parameter round_kludge. - Loki Added support of labels for setq(), setr(), r(). (SVN 84, fix in SVN 87) Added extra protection to garble() on exec() call for CPU (SVN 84) Added templates (ala SETQ_TEMPLATE) for setq labels. (SVN 89) Enhancement to idle timeout to take into account lagging servers (SVN 93) Center allows NON-ANSI multi-character filler [SVN 94] Lexits() and Lcon() take optional output seperators [SVN 95->96] Lexits and Lcon() take arguments to turn #dbrefs into names [SVN 101->102] Added /notify switch to @switch [SVN 108] Added additional arguments to dice() [SVN 110] Made v() allow registers 11 through MAX-ARGS [SVN 111] Made strfunc() aware of bypass() [SVN 112] Mail now displays a 'm' by any message set for auto-deletion [SVN 117] map() now allows ArgN arguments to be passed to it as %1-%?? [SVN 118] Added time skew detection and protection to readjust mush time [SVN 123] Added some addition protection for network flooding [SVN 123] Added optional arguments to dig() and open() for location/returns [SVN 123] Enhanced door code to be useable [SVN 125] Modified asksource.sh script to handle all new options [SVN 125] Added MUX2 password compatibility for reading converted databases [SVN 125] Added beta option support for MySQL, Doors, and 64bit SBUF/attribs [SVN 125] Added auto-detection of 64 bit platforms [SVN 125] Added MAILFILTER attribute to change destination of incoming mail [SVN 127] Fixed some uninitialized variables in view_atr [SVN 129] - Loki Altered case() and caseall() to support #$ substition like switch() [SVN 130] - Loki Slight mistake in the case()/caseall() fix in 130. Fixed [SVN 136] - Loki QDBM support added as an optional database layer [SVN 131-135] - Ambrosia Error() accepts an optional player argument to base error messages on.

- Thanks Ratio (and many others)

FIX_AIX obsoleted by a small mail.c/mailfix.c rewrute - Ashen [SVN 162] modified sub_include so that the CHR_<str> value if fed an integer specifies how many

values to take.

Copy/paste error lead to @break behaving like @assert. [SVN 168] - Loki Removed minimal_db from the distro. It can be found on the download site under Contrib. [SVN 171] - LOKI timefmt(), convsecs(), convtime() and moon() now handle 64 bit time. [SVN 172] list() has an optional target player for output (must control target) [SVN 177] garble() has new optional type value to return character count instead of string [SVN 177] remit() has optional key value to specify if it's a to-reality output or normal remit() [SVN 177] /DISPLAY switch for @function to display details on target function. [SVN 177] /LIST switch for @function allows wildcarding. [SVN 177] @list buffers no longer spams the living crap out of you. [SVN 177] Sideeffects: Tidied up the wizhelp entries and added example page

Allowed for keyword negation (i.e. sideeffects = PENN !OPEN MOVE). [SVN 178-179] - Lensman

strip() takes optional 3rd argument to specify allowing only specified characters [SVN 180] accents are now allowed as a markup language via the %f substitution. Requires ZENTY_ANSI [SVN 180] printf() modified with '&' identifier for carrage return alignment processing [SVN 181] filter() can now take multiple arguments. [SVN 190] /STOP and

/CONT switches added to @halt. [SVN 192] @wait/pid modified to be much nicer on the queue [SVN 192] chr() allows characters 160 to 255 to be done via markups (%<3digit>) Cleaned up extension characters by integrating into the accent parser [SVN 201] On rooms @toggled LOGROOM, if there is a LOGNAME attribute on the room, it uses that instead [SVN 204]

> **NOTE** Name must be alphanumeric and be under 70 characters in length. - Thanks Ixokai

%q<variable> added for TM3 compatability with named labels [SVN 205] setq/setr family now allow ! to asign next available register or re-assign existing register [SVN 208] nameq optionally displays register asigned to label [SVN 208] the PID of the running process now stored to netrhost.pid [SVN 208] Signal handling improved for USR1 and USR2 [SVN 212] /oneeval switch to @pemit for single evaluation of a @pemit/list [SVN 213] lexits() allow page listings [SVN 233] lrooms() - fix for specific room identification [SVN 233] @function/display now shows flags of functions [SVN 233] rework lattr() and lattrp() as well as cluster_lattr() to use centralized core functionality [SVN 233] rework of ueval() to handle cluster or non-cluster [SVN 233] lock() allows optional third argument to set/clear attribute locks [SVN 233] merging of all cluster_Defaults into single handler [SVN 233] action lists attached to >, @cluster/set, and cluster_set() [SVN 233] @wait with +/- values [SVN 233]

- Thanks Raevnos

BOUNCEFORWARD attribute parser for BOUNCE flag [SVN 233] VATTRCNT() has optional 2nd argument to reset the vlimit on the dbref# [SVN 244] pgrep()/cluster_grep() has additional arguments for outputting matches [SVN 244]

- Thanks Cary

Updated help for printf() [SVN 253] Fix for OSX 10.5.2 with regards to more restrictive header include files [SVN 254]

- Thanks Lyoc

TO BE DONE: add python interpreter TO BE DONE: @plugin

> Additions:

> — Functions —

[18-13] Add isint() for MUX/Penn compatability [18-17] Added fmod() for Penn compatability. regmatch() - regexp (penn) regmatchi() - regexp (penn) regedit() - regexp (penn) regediti() - regexp (penn) regeditall() - regexp (penn) regeditalli() - regexp (penn) reswitch() - regexp (penn) reswitchi() - regexp (penn) reswitchall() - regexp (penn) reswitchalli() - regexp (penn) regrab() - regexp (penn) regrabi() - regexp (penn) regraball() - regexp (penn) regraballi() - regexp (penn) regrep() - regexp (penn) regrepi() - regexp (penn) bypass() - used in @functions to bypass hardcoded limits logtofile() - Function equiv of @log - limit 1/command. searchng() - Like search() but don't return GOING/RECOVER. keepflags() - keep data type based on flags remflags() - remove data type based on flags foldercurrent) - list current folder or share folder folderlist() - list all folders of target nameq() - name/rename labels for setq registers (SVN 84) spellnum() - Penn compatable returns full name [SVN 125] ibreak() - for iter() and list() [SVN 109] shift() - and additional arguments to dice() [SVN 110] fbound() - like bound but for floating point [SVN 137] fbetween() - like between but for floating point [SVN 137] strdistance() - Levenshtein Distance between two strings [SVN 146] tr() - Transform string based on find/replace [SVN 156] digest() - SSL algorithm encryptions. Yay is life. [SVN 158] roman() - Number to Roman Numeral converter [SVN 160] printf() - Printf() moved to the mush! Yay is life. [SVN 177] accent() - Allow accent() markup characters specified by string [SVN 180] stripaccents() - Strip the accents on the target string [SVN 180] pid() - Show pid processes of anything you control [SVN 192] pgrep() - grep for parents [SVN 233] cluster_u() - cluster u() [SVN 233] cluster_u2() - cluster u2() [SVN 233] cluster_ulocal() - cluster ulocal() [SVN 233] cluster_u2local() - cluster u2local() [SVN 233] cluster_uldefault() - cluster uldefault() [SVN 233] cluster_u2ldefault() - cluster u2ldefault() [SVN 233] cluster_udefault() - cluster udefault() [SVN 233] cluster_u2default() - cluster u2default() [SVN 233] cluster_grep() - cluster grep() [SVN 233] cluster_regrep() - cluster regrep() [SVN 233] cluster_regrepi() - cluster regrepi() [SVN 233] cluster_hasattr() - cluster hasattr() [SVN 233] cluster_lattr() - cluster lattr() [SVN 233] cluster_attrcnt() - cluster attrcnt() [SVN 233] cluster_vattrcnt() - cluster vattrcnt() [SVN 233] cluster_get() - cluster get() [SVN 233] cluster_xget() - cluster xget() [SVN 233] cluster_set() - cluster set() [SVN 233] cluster_default - cluster default() [SVN 233] cluster_edefault - cluster edefault() [SVN 233] cluster_stats()

- specifies statistics on cluster [SVN 233] cluster_get_eval() - cluster get_eval() [SVN 233] cluster_ueval() - cluster ueval() [SVN 233]

Additions:

— Commands —

@assert - Works like @break but reverse logic [18-9] idle - a 'nothing' command that won't effect idle time. Wizzes can optionally add command. > for cluster sets (instead of &) [SVN 233] @cluster/new <dbref> – won't work on cluster object [SVN 233] @cluster/add <dbref>=<dbref> – won't add a pre-existing cluster object [SVN 233] @cluster/del <dbref> – won't delete a non-existing cluster object [SVN 233] @cluster/clear <dbref> – purges the cluster list [SVN 233] @cluster/list <dbref> – lists objects in cluster, total attributes, threshold, and action list [SVN 233] @cluster/threshhold <dbref>=<number> – sets a threshold on the cluster [SVN 233] @cluster/action <dbref>=<string> – sets action when treshhold is met [SVN 233] @cluster/edit <dbref>=<string>,<string> – edits the attribute(s) in a cluster [SVN 233] @cluster/set – @set for clusters [SVN 233] @cluster/repair – repairs a damaged cluster (or tries to) [SVN 233] @cluster/grep – grep for a string in a cluster [SVN 233] @cluster/reaction – edit for actions [SVN 233] @cluster/cut – physically cuts the item from a cluster - only use as last resort [SVN 233] @cluster/trigger – trigger action on cluster [SVN 233]

Additions:

— Flags —

NO_CODE - Controls usage of code-commandss/functions. Uses new second permission table.

Additions:

— Powers —

Additions:

— De-Powers —

Additions:

— Toggles —

HIDEIDLE - Stops the 'idle' from being updated as well as command count. Wiz+ only. MORTALREALITY - disables the inherit ability of wizards for wiz_always_real [SVN 126] MAILVALIDATE - validate the user list and abort mail without sending to anyone if invalid.

- Thanks Charlotte@Cajun

CLUSTER - (internal toggle to handle cluster objects)

— Admin params —

[18-9] Added zones_like_parents for zones to search like @parents.

- this does require the ZONECMDCHK @toggle set on each item/player.

log_maximum - specify the number of logtofile() calls allowed per command. power_objects - enable @power/@depower checks on non-players rooms_can_open - allow rooms to be able to @open exits inside itself sub_override - specify what %-subs can be overridden sub_include - specify what %-subs you want added

- Ambrosia

signal_object - Object containing signal handling attribute for SIGUSR1.

- Odin

break_compatibility - @break/@assert allowed/disallowed double-evaluation (disabled by default) signal_object_type - Type of execution to do. Default is '0' (function only)'. 1 is a @trigger effect. [SVN 212] log_network_errors - enables (or disables) logging of network errors on sockets

— BUG FIXES —

SORTBY was mangling the enactor.

> • Melpomine @ Vieux Carre

[18-7] THIS IS AN UNOFFICIAL PATCH. This fixes a Reality Level Lock issue.

> • Thanks Ixokai

[18-8] Fixes a vprintf allocation issue. [18-9] Fixed a logical error with unfindable and the connect flag.

> • Thanks Xandar

[18-12] Fix double eval to @break/@assert to mimic Penn [18-13] Fixed the convert scripts to handle irrigular behavior in TM3 flatfile [18-14] Fix for LBUF free in elist() [18-15] Fix for permission issue with regards to no_examine and attrib fetches [18-15] Fix for possible array out-of-bounds with regards to backstage [18-16] Fix in wrap() for wrap_out code with possible overrun (non-crash)

> Note: this effected both wrap() and wrapcolumns()

[18-17] Fix for moon() on displaying waxing/waning exact matches.

> • Thanks Jeff

[18-17] asksource.sh (make config/make confsource) fixed with (l)oad issue. [18-17] Fix for news/verbose switch that broke previous workings - Fixed

> • Thanks Ambrosia

[18-18] Fix for soundex() with a buffering issue (non-crashing) - Fixed

> • Thanks Jeff

Bug in (d)elete option in asksource script - Fixed Bug in 'home' with reality level following - Fixed

> • Thanks Ol'Sarge @ Cajun

Bug in '@idesc' with reality level if 'Real' level not using '@desc' - Fixed

> • Thanks Toby @ Cajun

Bug in '@rsrvdesc2' if target desc is '@idesc'. - Fixed

> • Thanks Toby @ Cajun

Bug in double-free if default globals enabled - Fixed

> • Thanks Ixokai

Make config/confsource for option 15 and option 9 didn't escape the '$'. - Fixed

> • Thanks Odin

Small issue in mail code where if max-index is reached mail won't send - Fixed Bug in do_dbck with db loading/startup/reboot - small chance of crash. -Fixed

> • Thanks Odin

Feature bug in read_remote_name. Didn't check examinable - Fixed

> • Ambrosia

Hook 'fail' didn't work in hook_cmd. - Fixed

> • Rook

Bug in mail.c where it could effect @nuking players - fixed

> • Odin

Bug in news.c where it could effect @nuking players - fixed

- Odin

Bug in @quota where buffer was mistakenly freed prior to display - Fixed

- Ambrosia/Ashen

Issue with page/port and the MUXPAGE toggle. Resolved, page/port now cannot be used in combination with MUX-PAGE

- Lensman

Several missing helpfile entries added: isupper/islower, brace_compatibility, format_compatibility -Ambrosia

Bug in speech.c when compiling on some flavors of BSD fixed. Also cleaned some warnings.

- Odin

Fixed a bug in cque.c relating to queue accounting on exceeding player_queue_max.

- Odin, fixed and found by Brazil.

Fixed an issue with certain locks with displaying attribute names in examine. NON-CRITICAL-ISSUE

- Ixokai

Fixed a strip issue of {}'s with regards to ']'. The] command shouldn't strip anything.

- Odin & Ambrosia

Fixed a problem with 8-bit dates being passed to the compiler as build time. We now use date -R for RFC time. Fixed a problem with examine on targets you didn't control. Fixed problem with @kick and the queue. Fixed buffer clobber issue in lloc() (introduce 3.9) Fixed logic error of command pathing with ignore on 'goto' command. Fixed 'N' command from showing up. (for] alias) Fixed display for percent subs with regards to @hook. Fixed wrapcolumns() where it could crash on unique strings.

- Thanks melkir

Fixed a bug with flag_name and possible duplicated entries Fixed chomp() to handle %r conditions cleaner. sub_include had a possible unitialized condition for %0-%9 on rare occurances. (SVN-87)

- Thanks Loki

crash bug in lcon/lexit additions - fixed (SVN-105) Finally believe the output snuffing issue is fixed (SVN-105) SIGSYS and some other signals were mistakenly handled as panic shutdown. setq()/setr() didn't evaluate first argument. Introduced SVN 87 [SVN 113]

- Thanks Melkir

Somehow @list options values got broken by a typo. Weird. Fixed. [SVN 114] Tprintf off by one issue fixed for buffer allocation [SVN 115 - SVN 116] Off by one bug in map() from SVN 118. Non crash, just argument list off [SVN 119] Crash bug in ATRLOCK if attribute did not previously exist in hash lookup [SVN 120] Realities had a logical bug. Now previous (broke) behavior available as option [SVN 122-124] Fixed a bug in Reality level handling and CHKREALITY Toggle [SVN 125] Fixed uninitalized variable with regards to dig()/@dig. Introduced SVN 123 [SVN 128] Fix for QDBM compiles on aborting on the 'rm' section. Introduced SVN 136 [SVN 137-138] Critical fix for time skew on AMD's. Infinite loop. Introduced SVN 123 [SVN 139] Fix for sha1.c and mushcrypt.c for compiling issues. MUX2 provided code. [SVN 140] Forgot to update this bloody file [SVN 141] Fix for null entries deidling a player. It was intended behavior, but this could

be confusing so was fixed. It still will de-cloak an idle-cloaked wiz. [SVN 142]

Fix for timeskew affecting internal timers, such as database dumping. [SVN 143] Fixed a bad define for 64-bit autodetection. [SVN 143] Fix for timeskew affecting global timers. Introduced SVN 140. [SVN 144] (Rehash: SVN 151)

- Thanks Ratio

Clean up code a bit with implicit declarations [SVN 145] Bug in signal handling. If during a dump, it happened during an alarm() state,

> alarms would be ignored and as such the timer would be broke from that point on. Fix causes signal restore to re-set the alarm state.

>> • Thanks Ratio

spellnum() had a comparision bug with 'tens' digit. [SVN 152]

>> • Thanks Ratio

signal handling interferred with @reboots randomly (Introduced 3.9 SVN 100) [SVN 153]

>> • Thanks Ratio

Crashbug in RANDMATCH() (Introduced 3.9) [SVN 157] Missing free_lbuf() in caseall() (Introduced SVN 136) [SVN 157] Fix for QDBM and mail if the mail db can't load correctly. [SVN 161] Fix for @break/@assert to stop double-eval of first argument [SVN 164]

> • Thanks Brazil

Fix for all of the *default() functions evaluating default behavior all the time.

> **It really probably shouldn't have done that. [SVN 166]**

>> • Thanks Orion

Wouldn't you know it, the *default() fix broke some backward compatability (introduced SVN 166). Fixed [SVN 167] Yet another fix but this time to evaluate arguments to all the *u*default() functions (intro SVN 166) Fixed [SVN 168] Fix for ptimefmt as the structure declaration was missing an argument. Bad mojo. - Fixed [SVN 174] Rhost's hardcoded news system failed to free an lbuf on subscribe checks - Fixed [SVN 177] creplace didn't evaluate its second arguments and some syntax issues. - Fixed [SVN 183] Tweeking of unsafe_tprintf to safe_printf in some locations where heavy usage is seen [SVN 190] mail/reply with the the all option wouldn't work if targets had spaces in names. [SVN 194] vsprintf didn't like the double %% for statically stating % in certain libraries [SVN 195] translate() didn't take %0-%9 arguments [SVN 196] citer() had a double lbuf free on replace_tokens [SVN 198] @whereis/@whereall didn't hide the location if user was hidden/dark correctly [SVN 202]

> • thanks Planet X

@mvattr/@cpattr should handle SBUF sized attribute names cleaner. - Fixed [SVN 207] Help topic for @assert reversered - Fixed [SVN 209]

> • Bug ID 0000004 (BlackRook)

%q<label> broke with trace conditions. Introduced SVN 108 - Fixed [SVN 209]

>> • Thanks Melpomine

bang support didn't work for overloaded functions. Fixed [SVN 210]

>> • Thanks Melpomine

SIGUSR1 would ignore the signal after use at times. Fixed [SVN 212] Possible SIGSEGV with argument preprocessing on certain commands. Fixed [SVN 213] Fix for SIGALRM being ignored when IGNORE_SIGNALS compile time option enabled. fixed [SVN 225]

> • Thanks grump

Fix for map()/filter() for argument list passed. Fixed [SVN 227]

>> • Thanks Ratio

Help not documented for fill character in ljc()/rjc() - Fixed [SVN 228]

>> • Thanks Cary

OUTPUTPREFIX/OUTPUTSUFFIX stored through reboots - Fixed [SVN 233]

>   • Thanks Adrick

Added missing topics for clustering - Fixed [SVN 244]

>   • Thanks Cary

Logging network errors could cause heavy logging on really bad networks - Fixed [SVN 245] Connect honors @hide/unfindable/dark [SVN 320]

>   • Thanks Planet X

XXXXX

[06/28/2004]

>   **RhostMUSH 3.2.4 p18 Update File** —- Changes —-

@aflags takes /full switch to give count on how many objects have the attribute. useful incase you have concerns of attributes dissapearing.

Added queue_compatible config option to allow negative decremental of the

>   **semaphore attribute for elsemush compatibility**

>>   • Lyle, Saffron, Dragon @ Paris

Added -DPARIS compile time option for older Penn/MUSH format compatibility

>   • Dragon @ Paris

Added -OLD_SETQ compile time option to switch setq/setq_old compatibility

>   • Thanks Lyle, Saffron, Dragon @ Paris

In all source, header, help, and readme files, 'compatable' renamed to 'compatible'

>   • Ambrosia

Enhanced mail/recall to show more stats (lots of people wanted them)

>   • Lots of people

Added percent substitution ceiling for uniquely created DoS attacks. Heh. FUBAR flag no longer allows you to execute any functions. Added config param 'lcon_checks_dark' that will enforce dark/unfindable.

>   • Thanks Xandar

Beefed up on-line help for reality levels. Hopefully they make sense now :) Mail/read recognizes 'both' to handle first new/unread message combination. mail/anon optionally hides sender KEEPALIVE @toggle added. - (AuroraMUX/Soruk) chkreality() function to check if victom sees target's reality. CHKREALITY toggle that allows @Lock/user to become a reality lock @admin param 'reality_locks' to globally enable reality level lock checks.

>   • Thanks lots of people.

Added /fail switch to @Hook.

>   • Originally Amborsia, modified. (MUX2 compat)

Added @admin param reality_locktype that optionally chooses how reality locks are issued. This should allow much more flexability.

Sideeffects could double eval. This was intended for some backward compatability with muse, but does allow a security risk. Now have an optional compile time option of SECURE_SIDEEFFECT that disables this.

>   • Ambrosia

Added LOGGED attribute flag that will log anytime that attribute is changed, modified, set, or cleared.

NOISY toggle to allow consistant noisy sets

> • Thanks Tam

backup_flat.sh now accept a '-s' option for single-mode for cron entry.

> — BUG FIXES —

WHO/DOING on the connect screen had a broken conditional where if you were NOT unfindable you still wouldn't show up on WHO/DOING on the connect screen. - Fixed

> • Ambrosia & Tam@Stargate: Alpha Site

help files wouldn't process escape characters right with ZENTY_ANSI - Fixed

> • Thanks Zivilyn/Xandar

mail/recall couldn't do lookups based by-player on multi-sent messages - Fixed Wizard objects not inherit hit attr @limits - Fixed Possible crash bug with mail dynamic aliases via '$'. - Fixed

> • Thanks Xandar

@dynhelp/parse wouldn't display ansi correctly (from previous fix) - Fixed CPU Protection not as robust on certain cases - Fixed Month was off by one in mail/recall (introduced p18)

> • Thanks Mortalis @ Cajun

mail/recall had off-by-one for month (introduced p18) logf() conflicted with built-in function in newest gcc compilers - Fixed type cast warning in random function - Fixed Unused variable cleanup in code. - Fixed format_name undocumented - Fixed IGSWITCH @hook didn't work with new format of commands in some instances - Fixed Trace output issues with CPU protection - Fixed LBUF failed to be free on examining in rare cases. (introduced p18) - Fixed Cleanup of some initialization variables. Not a problem. Just a cleanup. asksource broke on solaris systems. - Fixed Lots of cleanup for Solaris 2.8/2.9 builds. Solaris didn't declare right. - Fixed Security issue with descs clobbering setq regs - Fixed (optional @admin param) new backup_flat.sh script broke for remote archives - Fixed player cache had possible dereferenced pointer call - Fixed autoreg_include.txt didn't check txt subdirectory. - Fixed reality locks overwrote match state data (introduced p18) - Fixed [18-1] Fix for IGSWITCH @hook and multiple switches - Fixed [18-2] Fix for unfindable and loc() and other functions - Fixed

> • Thanks Spatterlight

[18-3] Fix for %l in trace output (same issue as loc() had) - Fixed

> • Thanks Spatterlight

[18-4] Fix for global attribute formatting where 'what' should have been 'owhat' [18-4] Modification to allow localized formatting with &format<attr>

> • Thanks Kevin

[18-5] Added content searches for all forms of help. [18-6] Fix LBUF free issue (introduced 18-4)

> **Fix mail issue with marking and folders**

> > • Thanks Kevin

> Enhanced @break to accept optional argument to 'branch'

> —- Changes —-

Rhost 3.2.4 is a locked version. only bug fixes from this point on. The next release will be 3.9 which will be alpha/beta leading to the 4.0 release.

Added sub-patchlevel versioning for pre-release patchlevel testing. Sanitizing of help files to correct missing/misdefined config parameters.

> • Ambrosia

An optional .conf file now has all available options to choose from.

> • Ambrosia

LOGROOM toggle now logs to subdirectory 'roomlogs'.

> • Thanks Xandar

new admin param 'roomlog_path' specifies path of above LOGROOM path. attrcnt() modified to help rebuild wonked attribute tables @aflags modified to help list attribute information

> — BUG FIXES —

malloc.h wasn't properly identified in the configure tool - Fixed ZENTY_ANSI didn't handle ansi correctly if TINY_SUB was also defined - Fixed @admin param garbage_chunk wasn't used - Removed

> • Ambrosia

@admin param precmd_obj wasn't used - Removed

> • Ambrosia

sortby() imported for backward compatibility. updated Rhost minimal_db to handle new conf file parameters.

> • Thanks Cloud

You could alias over hardcoded functionality - Fixed Improved attribute handling for corrupting attributes. @attribute/delete now does sanity checking for attribute existing first @aflag shows the numerical unique identifer of the attribute @pcreate/reg would crash if issued by a non-player - fixed

> • Thanks Xandar

> —- Changes —-

+proof in mail now displays text for forwarding/replied messages.

> • Many Many People

@cpattr, @mvattr, and @edit now take attribute content locking into effect. inc() and dec() now take strings as '0' values. @door rewrite to handle mangled port openings/closings. @decompile now has /attribs, /flags, and /all switches

> • Thanks Tam@Stargate: Alpha Site

@set with the /noisy switch notifies if attributes (cleared)

> • Thanks Tam@Stargate: Alpha Site

@dynhelp (dynhelp()/textfile()) now does partial-matching. - for mail writing will now allow you to insert '=' without escaping.

> • Thanks Alibi@Cajun

New bugreport script to handle bug report mailing.

> • Lensman & Ashen-Shugar

New auto configurator scripts for make options. ZoneWizLock now allows you to examine any area in the zone as well

> as modify it. Royalty and higher ownership overrides this lock.

Help and Wizhelp have improved topics. Third party work on PHP and SQL support - Still in pre-beta, not included.

> contact lensman@rhostmush.org for SQL

@hook for security related commands shored up. Modified credits for MUXPAGE toggle. Penn had the feature first :) Wizards now optionally checked for @limits The non-command alias functionalty has been given a well-needed overhall Better error handling was added to the functions in htab.c Unified some of the Makefile defines for OsX, Cygwin, BSD. Added funceval to @list @doing and @doing/header expanded in length to full-use.

- Thanks Falor

switch(), switchall(), and @switch now optionally take #$ substitutions. GREATLY updated auto-makefile configurator to handle most common library checks. lattr() takes multiple page values

- Thanks Sirona@Cajun

Additions

— Functions —

aiindex() - works like iindex() except will append to a null list. sortby() - Added for MUX2 compatibility

Additions:

— Commands —

Additions:

— Flags —

Additions:

— Powers —

Additions:

— De-Powers —

Additions:

— Toggles —

—Admin params —

wizmax_vattr_limit - Attribute limiter for wizards wizmax_dest_limit - Destroy limiter for wizards vattr_limit_checkwiz - Enable/Disable wiz limiters guild_attrname - Make the GUILD column in WHO read a different

attribute. (new players also have this attr set with the default value)

- Suggested by Leona@Faetopia

exits_connect_rooms - This parameter defines if rooms with exits will never be floating. This parameter will disregard the need for exits to always be indirectly linked to the starting room.

switch_substitutions - If enabled, allows #$ substitutions in switches. examine_restrictive - Settable 1-5 (0 disables) to restrict examine based on 'level'

— BUG FIXES —

Double free issue with caseall() - Fixed Possible SIGSEGV condition with nobroadcast_host (introduced p15) - Fixed If memory/system corrupted, could corrupt room check in command.c - Fixed Possible SIGSEGV with +proofing mail (introduced p15) - Fixed Exit movement backward compatibility broke with unlinked exits (introduced p15) - Fixed

- Thanks Ol'Sarge@Cajun

Possible SIGSEGV legacy bug with flag handling - Fixed

- Thanks Tethys@Cajun

strmath() didn't work like expected with 'amt' argument - Fixed BOUNCE flag was not cleared on recoverable objects - Fixed

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- Thanks Iuz

debugstack extra free in alias table (introduced p15) - fixed

> - Thanks Jamie@M*U*S*H

NDBM in make confsource assumed ndbm.h on server sane. It's usually not. - Fixed Wizard limits wern't verified on ownership if not set INHERIT - Fixed help/wizhelp didn't show that you could do topic wildcard searches - Fixed

- Thanks Falor

help syntax error with regards to null() and @@() - Fixed

> - Thanks Falor

Passing only one attr to @admin logout_cmd_alias caused a crash - Fixed

> - Thanks Ambrosia

BLIND wasn't consistant for all commands - Fixed

> - Thanks Xandar

The hash tables could appear to loose information where aliases were used. (introduced p15) - Fixed

The Hash tables are sized too small and don't reflect 'todays Rhost'. - Fixed @flag/remove wouldn't return an error message if no alias existed - Fixed hash with an off-by-one count. (Introduced p16 beta) - Fixed Typo with help.txt with regards to terse flag - Fixed

- Thanks Sasaki Chie@Fantasy Moon

> —- Changes —-

MASSIVE internal rewrite of internal flag/command/function structure to prepare for loadable/unloadable module support.

- Lensman

New Directory Structure for data, txt, src, hdrs.

> - Lensman

Script Rewrites for better resilliancy

> - Lensman, Ambrosia, Ashen-Shugar

local.c plugin support

> - Lensman

Alias system overhauled and rewritten to be more robust

> - Lensman

! and !! patch

> - Written and provided by Jeff

We now run on gdbm 1.8.3

> - Thanks Lensman

wildmatch fix

> - Lensman & Ash

minimal database provided that includes SGP, myrddin bbs, global code Add method for global (master room) exits to be shown with 'look'

> NOTE: PRIVATE and/or FLOATING flags remove this if set on exit.

Add anonymous mail via the /anon switch

> • Thanks Saffron & Lyle @ Paris

mail/recall cleaned up for better display/information.

> • Thanks Ivory@Mednights

Timestamps added for original message in forward/reply

> • Thanks Ivory@Mednights

lit() can accept commas as part of it's input string +bcc in mail/write now gives mail BLINDLY to get target. They won't see

> **the To: list(s).**

> > • Thanks Saffron & Lyle @ Paris

modified hastype() to have same permissions as type()

> • Thanks Rynos

fixed mail issue with dynamic mail aliases and permissions.

> • Thanks Erik

Add way for @emit to parse '##' for target it receives. /sub switch.

> • Thanks Jared Leisner @ Ennerseas

Add method to see 'mail/status' with mailstatus() function.

> • Thanks Rosalind @ Nevermore

config(sideeffects_txt) return the string of sideeffects enabled.

> • Lensman

Penn conversion script included in distribution.

> • Thanks Mac

/preserve switch to @chown and @chownall. Will keep all flags constant.

> • Lensman

@list stack now shows filenames instead of file pointers. /pid added to @notify to handle PID processes

> • Thanks Storm

/recpid added to @wait to record PID process to setq-registers specified.

> • Thanks Storm

@function takes /d[elete] switch to delete user-defined functions. lzones() now take optional arguments for large zone lists. Improved CPU protection (yes, even more). @doors are no longer preserved between reboots. 13th argument to columns() to allow padding of short columns

> • Thanks Patrick Bogen

inc()/dec() (the hardcoded xinc/xdec) now, like other servers, handle

> **non-numericals for arguments.**

> > • Thanks Xandar

@pcreate now allows you the /register switch so wizards can email the pwds.

> • Thanks Xandar

@pemit (and all switches) now handle REALITY LEVELS with /reality switch.

> • Thanks Dervish@Cajun

@admin alias allows re-aliasing existing aliases or deleting aliases.

> • Lensman

> Additions

— Functions —

elementsmux() - for MUX elements() compatibility.

> • Thanks Rook@EnnerSeas

parsestr() - helps with speech formatting. chomp() - used to strip returns before, after, or both sides of string.

> • Thanks Storm

escapex() - just like escape() but you can choose what chars to _not_ escape securex() - just like escapex() but for secure()'s counterpart

> Additions:

— Commands —

> Additions:

— Flags —

BLIND - flag for exits and rooms to make target arrival/leaving 'snuffed'.

> • Idea from many people (and TM3)

DEFAULT - Attribute flag for handling default global attrib (TM3) SINGLETHREAD - Attribute flag to handle single-threading $commands ATRLOCK - Attribute flag to handle global attribute locking

> Additions:

— Powers —

> Additions:

— De-Powers —

> Additions:

— Toggles —

MUXPAGE - Toggle to allow mux-like paging for Penn/MUX/TM3 compatibility.

> • Thanks PennMUSH

NOGLOBPARENT - Toggle to disable inheritance of global inheret parents. NODEFAULT - Toggle to disable global default handling (TM3)

> — Admin params —

mail_verbosity - Add Subj: to sent mail as well as to disconnected players.

> • Thanks Saffron & Lyle @ Paris

mail_anonymous - Default name for anonymous mail (Default: *Anonymous*) sidefx_maxcalls - (1000 default) for max sideeffects allowed/command. oattr_enable_altname - to enable/disable alt name usage in odrop/ofail/osucc. oattr_uses_altname - for alt names sent to odrop/ofail/osucc.

> • Thanks Rook @ Ennerseas (default _NPC)

empower_fulltel - Offer two methods for FULLTEL ('self' & anything not cloaked)

> • Thanks Punk@FantasyMoon

spam_msg - Message sent to spammers

> • Ambrosia

spam_objmsg - Message sent to spammers of objects

> • Ambrosia

room_aconnect - Aconnects on individual rooms work (cloak/dark checked)

> • Lensman

room_adisconnect - Adisconnects on individual rooms work (cloak/dark checked)

> • Lensman

player_attr_default - Sets default @<attrib> handler for did_it() attribs (TM3) thing_attr_default - Sets default @<attrib> handler for did_it() attribs (TM3) exit_attr_default - Sets default @<attrib> handler for did_it() attribs (TM3) room_attr_default - Sets default @<attrib> handler for did_it() attribs (TM3) global_clone_obj - Sets default dbref# for cloning attributes global_clone_player - Sets default debref# for cloning attributes (TM3) global_clone_thing - Sets default debref# for cloning attributes (TM3) global_clone_room - Sets default debref# for cloning attributes (TM3) global_clone_exit - Sets default debref# for cloning attributes (TM3) global_attrdefault - Sets global locker for attribute sets/clears nobroadcast_host - Define what sites will be 'snuffed' from MONITOR

> — BUG FIXES —

Bug in wizhelp with 'mail_lockdown' toggle. - Fixed

> • Thanks Dervish

Multiple help/wizhelp fixes. - Fixed

> • Thanks Dervish

Bug with @mvattr and QUIET flag - Fixed

> • Thanks Xandar

Objects could use the brandy toggle to send mail. - Fixed Security issue with autoregistration - Fixed goto didn't have hooks before/after right - Fixed SIGSEGV on autozone add if player didn't belong to zone - Fixed

> • Thanks Rook & Sylph @ Ennerseas

Bug with teleporting and permissions - Fixed

> • Thanks Mach Speed@FantasyMoon

NASTY bug that could corrupt registries with @freeze/@thaw/@wait (RARE) - Fixed

> • Thanks Rook @ Ennerseas

Fix help entry with @convert/@quota cross-matching. - Fixed

> • Thanks Dervish

Fix alloc corruption with 'page' from liberal nulls. (p15 introduced) - Fixed

> • Thanks Xandar

Fix issue where if in @program string sent to global_error_obj incorrect - Fixed

> • Thanks Zivilyn

Fix for orflags()/andflags() being broke with flag rewrite. - Fixed

> • Thinks Rosalind & Vulcan @ Nevermore

Fix for @hooks to now successfully work on goto - Fixed Fix for @uptime to show time up longer than a year - Fixed Fix for @hook on goto. Did not handle /permit or /ignore right - Fixed

- Thanks Rook

Fix for legacy bug in @list functions for blowing a buffer if too many user

> **defined functions have been defined. Wow, talk about old.**

> > - Thanks Aalita@Ennersea

Fix for ZENTY_ANSI compiletime with a possible buffer overrun. - Fixed Fix for ZENTY_ANSI with handling safebuff() - Fixed. Fix for two rhosts running same debugmon debug_id - Fixed. Fix for mis-matched DPUSH/RETURN for DPOP in door.c - Fixed Fix for pemit()/npemit() with argument evaluation - Fixed

- Thanks Matthew@Draconis

Fix for legacy bug with vattr initialization - Fixed

> - Thanks Matthew@Draconis

Fix for library overflow issues regarding system call on ptimefmt() - Fixed

> - Thanks Shari

Fix for default() and edefault() returning improperly for invalid dbref# - Fixed

> - Thanks Matthew

lock(), rxlevel(), txlevel(), and parent() didn't increment the sidefx counter the correct way. - Fixed

wizhelp entry with no_move had grammer mistakes. - Fixed

> - Matthew

Possible overrun on the stack with regards to iter() during certain config opts.

> - Thanks Illithid@Ennersea

[07/10/2002] RhostMUSH 3.2.4 p14 Update File —- Changes —-

round() excepts negative args (60) for rounding values to whole numbers. (MUX2) The SPOOF flag is now inheritable.

- Thanks Milk & Nyssa

Added /nosub switch to @pemit so ## and #@ arn't subbed. Add /preserve to @wipe that wipes all _but_ the match

- Thanks Mikhail Mikhailov

Force an ANSI_NORMAL at the end of @extansi calls @oxtport/@o<blah> messages don't show if a null string. This is handy

> **if you want to process sideeffects but don't want a result to show.**

> > - Thanks Nyssa

Add to cpu-slamming an optional way to register-site/forbid-site the person. set() now handles ansi. setq()/setr()/r() now handles ansi. If owner set FLOATING, floating messages not returned. Improved chksum methods on @freeze/@thaw Added /basic switch to @lock for PENN compatibility.

- Thanks Trispis@M*U*S*H

Attributes starting with a '~' are now supported if ATTR_HACK enabled.

> - Thanks Trispis@M*U*S*H

Added wildcard matches to @list user_attributes.

- Thanks Brazil@MUX2

Added a-z setq() registers for MUX/TM3 compatibility. (very MEMORY intensive) @list alloc now shows additional stack/lbuf information. iter() and it's ilk now use Brazil's replace_token() call for ## and #@ (MUX2) citer() now has an output seperator lwho() takes argument of '2' to list JUST the ports. Add internal attribute SpamMonitor to store history of command(s). Modified MONITOR sitecons so it shows the remote port they're connecting from. Modify sin(), tan(), etc (ala MUX) for conversions. Backward compatible (MUX2) Zenty's ANSI modifications.

- Thanks Zenty@RhostMUSH

Added way to convert PENN 1.7.5 flatfiles to RhostMUSH native.

- Thanks Mac

Added SHS password encryption and plantext to crypt/SHS conversion on the fly.

- Thanks Azhdeen@RhostMUSH

Additions

— Functions —

txlevel() - sideeffect that sets @txlevel (or displays)

- Thanks accela@AniMUSH

rxlevel() - sideeffect that sets @rxlevel (or displays)

- Thanks accela@AniMUSH

rset() - sideeffect that sets attribute and returns value.

- Thanks Trispis@M*U*S*H

pedit() - used to mimic Penn's edit() functionality (Penn) ptimefmt() - used to mimic Penn/Mux's timefmt() functionality (Penn/MUX2) textfile() - works like dynhelp() but pushes onto buffer (Penn)

- Thanks Raevnos & PennMUSH

lattrp() - lattr() for parent checks

- Idea from Jake & MUX2

ctu() - function that does deg/rad/grad conversion visiblemux() - works like mux's visible()

Additions:

— Commands —

@hook to show/display/change individual hooks. Switches are:

/permit	• Return 'Permission denied.' if fail lock (1/0 boolean)
/ignore	• Fall through command check if fail lock (1/0 boolean)
/before	• Process functionality before command execution.
/after	• Process functionality after command execution.
/igswitch	• Mark command to ignore failed /switch matches.
	• Thanks Moe@BrazilMUX (/igswitch idea)

Additions:

— Flags —

ATTRIBUTE FLAG: uselock - when set on an attribute with a $command, will look for a matching ~<attribute> to eval the lock. This does BOOLEAN evaluation. 1 pass, 0 fail.

SPAMMONITOR - mark if player and/or target item check for spam (60 cmds/sec)

> Additions:

— Powers —

None

> Additions:

— De-Powers —

None

> Additions:

— Toggles —

ZONEINHERIT - Allows zonemasters to have attributes inherited to children.

> — Admin params —

muddb_name - admin param for db names to seperate from 'mud_name'

> • Thanks Milk@MattRhost

global_error_obj - evaluate the VA attribute on the object if defined.

> **this will evaluate the 'huh?' message(s).**

> > • Thanks Zenty@RhostMUSH

mail_autodeltime - specifies when mail is globally purged (default 21 days) global_parent_room - globally inherit attributes to room w/o @parent global_parent_thing - globally inherit attributes to thing w/o @parent global_parent_player - globally inherit attributes to player w/o @parent global_parent_exit - globally inherit attributes to exit w/o @parent hook_obj - globally define the 'hook' object. hook_cmd - process 'hooks' on specified commands.

> PERMIT - to pass who can use/etc (bitmask 1) IGNORE - to IGNORE who can use/etc (bitmask 2) BEFORE - to pass what is done before command (bitmask 4) AFTER - to pass what is done after command (bitmask 8) IGSWITCH - bypass error control on non-existant switches.

> > • Thanks Moe@BrazilMUX (igswitch idea)

look_moreflags - if enabled, will show global flags on things with examine. stack_limit - nest check for 'stack' to throttle back a given amount. (Penn)

> — BUG FIXES —

HELPFILE - trigger() was not a command but was shown in help. -Fixed

> • Thanks accela@AniMUSH

HELPFILE - trim() had examples with args reversed. - Fixed

> • Thanks accela@AniMUSH

HELPFILE - locate() had 'I' instead of 'i'. - Fixed

> • Thanks DOSBoots@AniMUSH

HELPFILE - Help on substitutions incorrect with %-subs. - Fixed

> • Thanks DOSBoots@AniMUSH

HELPFILE - wizhelp didn't list 'news' and 'newsdb' in the main list. - Fixed

> • Thanks Nyssa@Everywhere

HELPFILE - help didn't show the /quiet switch to @trigger. - Fixed

- Thanks Deus Maximas@TaintedEarth

HELPFILE - modify help for twinklock to point to NOMODIFY flag.

- Thanks Lyle

Option incorrectly shown in @list options mail. - Fixed SESSION didn't cut the name off at 16 chars (formatting issue) - Fixed mailquick()'s arg didn't totally mirror MUX's mail() - Fixed Fix for if who_unfindable disabled, player_dark disabled, and allow_whodark enabled

you'd never get the connect flag of a wizard. - Fixed

Linux and other weird unix systems tended to hang on AUTH lookups still. - Fixed

- Thorin@RhostMUSH

v() wouldn't handle special chars as first char if enabled via ATTR_HACK - Fixed

- Thanks Trispis@M*U*S*H

parent() when used to set a new parent did not return the dbref# - Fixed Fixed legacy bug in QUEUE which effected a-z setq() regs. - Fixed 'home' check was broke if set disabled and ignore at the same time - Fixed @thaw didn't handle semaphores properly. - Fixed

- Thanks Dervish

Zone-ignores didn't work for QUIT, LOGOUT, and it's ilk. - Fixed

- Thanks Nyssa

Debug Monitor stack had a conditional off-by-one state on @reboots - Fixed

- Thanks Mac and Ambrosia

@extansi was broke when ZENTY_ANSI not defined - Fixed

- Thanks Ambrosia & Lensman

plushelp_file and plushelp_index missing from wizhelp - Fixed

- Thanks Ronan

wildcard matching could become problematic - Fixed.

- Thanks Sketch@M*U*S*H & Javelin

Help was missing for @admin parameter areg_lim. - Added Help was inconsistant for die() and dice(). - Changed /quiet switch to @notify. Also added /quiet switch to @drain.

- Thanks Hellspawn@MUX2

@cpattr modified so if no source given, assumes enactor (player) to be source. lattr() now takes 3rd argument. '$' for all $commands, '^' for listens. /clear switch added to @toggle. It only clears what you have access to clear. If there are more than 20 zones on an item, it displays the dbref#'s only. /## notation added to @site and all @admin site information. (0-32 range) ANSI highlight of @edit substitutions added. Follows NO_ANSI_EX toggle. Multiple 'types' now allowed in function remtype() On buffer problems, it records the line number and file that it happened. @list options handle sub-options now (config, mail, boolean, values) Name field increased from 16 to 22 characters (MUX2/TM3/PENN) /instant switch to @destroy (compatibility) - is the 'default' behavior. (TM3) Immortals/#1 can use mail/recall to see mail sent by others. 3rd argument to lrooms()'s to show level you're in (MUX2) LOGGING option to @flagdef. Logs all setting/removing (configurable) Allow specifying filename to @dump/flat (filename restricted and ends in .flat)

- Thanks Reptile@CotM

Modification to @lock/GetFrom to include target's location as well. Options added to mail[/read] for more flexability (ball, nall, uall) Ports listing added to lwho() (boolean 1/0 - 0 (null) default) Ports added to idle() (boolean 1/0 and

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optional specified port) Ports added to conn() (boolean 1/0 and optional specified port) cmds() modified to handle target port lattr() handles optional target of *player and player now.

Additions

— Functions —

safebuff() - function to go back in the function until the first matched delimiter if strlen() is equal to or greater than the maximum. (3998 characters) - Note: this _WILL_ strip ansi.

floordiv() - return the 'floor' (rounded down) of result of division. (MUX2) last() - return last word specified by delimiter (MUX2) singletime() - return time rounded to lowest element (s, m, h, d, etc) (MUX2) parenmatch() - (2 args, 1 just for error) (Idea from ChaoticMUX)

ansifies all bracket/paren/brace matches and RED's nonmatch.

lrand() - (4 arguments) - returns random numbers between two points (MUX2) keeptype() - does reverse of remtype() lcmds() - List all commands '$' or listens '^' on object (MUX2) pack() - convert a number to base 2-64. (MUX2) unpack() - convert a pack()'d number back to base 10 (MUX2) crc32() - return a crc32 code for the specified string. (MUX2) toggle() - works like the @toggle command. Follows SIDEFX restrictions. moneyname() - returns the singular/plural name based on argument (Discordia) config() - if no argument, displays all parameters (you have access to),

otherwise display the value of the specified parameter.

Additions:

— Commands —

@eval - force evaluation of functionality (TM3)

Additions:

— Flags —

Additions:

— Powers —

Additions:

— De-Powers —

mortal_examine - if set, target always examines like a mortal. (@decompile/etc)

- Thanks Belial@Armageddon

Additions:

— Toggles —

mail_lockdown - target is restricted in mail 'monitoring' like a mortal. muxpage - allows 'p <blah>' to work like in MUX/TM3

— Admin params —

log (parameter) god - log all activity of #1 heavy_cpu_max - ceilings heavily used cpu-intensive functions. lastsite_paranoia - enable auto-register/auto-forbid of hosts spamming site. max_lastsite_cnt - specify # of connects in period of time to allow from site. min_con_attempt - specify the wait between 'first' connect and subquent cons. lattr_default_oldstyle - (default 0) snuffs the '#-1 NO MATCH' (TM3) formats_are_local - localize @nameformat, @conformat, @exitformat mail_def_object - default object for global aliases.

Handle 'alias.name' and 'comment.name'.

wizard_queue_limit - distinguish between wizard and mortals for queues. max_pcreate_time - time range allowed before max_pcreates reached. max_pcreate_lim - number of pcreates allowed in given timeframe pcreate_paranoia -

level of action you want to take against infidels (0-2) global_parent_obj - global parent that attributes are inherited off of.

— BUG FIXES —

convtime() used daylight savings - no longer uses daylight savings - Fixed IDESC wouldn't work with Reality Levels - Fixed Bad memory could corrupt command parsing with sockets - Fixed @list alloc would scroll values negative - Fixed @teleport and movement could 'hide' from wizards in inventories - Fixed home, if @icmd'd, wouldn't allow the command to be overridden - Fixed The CLOAK flag would give 'has left' messages - Fixed The lookup_player() code now handles '*' as well as not. - Fixed If recycling was not enabled, you could still @destroy - Fixed Trace output was broke with how it displayed enactor/target - Fixed

- Thanks Raevnos@M*U*S*H

NOSTOP flag on objects in the master room could cause an infinite loop - Fixed

- Thanks Selene@TaintedEarth

QueueMax attribute would not work unless owned by the target. - Fixed DNS/AUTH lookups could have unforseen behavior with non-printable chars - Fixed

- Thanks Morgan@RhostMUSH

setqmatch() does not work like the help dictated it should. - Fixed

- Thanks Belial@Armageddon

hastoggle() was wizard-only for no reason - Fixed

- Thanks Belial@Armageddon

atof() could have buffer issues if string greater than 100 characters. - Fixed

- Thanks Brazil@BrazilMUX

Counts for input, output, and lost fields were not accurate - Fixed

- Thanks Amos@RhostMUSH

@conncheck could have unpredicatable results with the name of the door. - Fixed

- Thanks Amos@RhostMUSH

MONITOR information had some uninitialized values that could crash - Fixed

- Thanks Amos@RhostMUSH

DARK flags with wizards so it won't show wiz as being connected. - Fixed

- Thanks Ian@Everywhere

mid() didn't work like it did in MUX2/PENN. It's now an alias - Fixed type() could bypass cloaked targets - Fixed

- Thanks Brazil@BrazilMUX

quick_wild() could cause some SIGSEGV's if not accurately verified - Fixed inventory doesn't handle Reality Levles corrected - Fixed

- Thanks Zenty@BrazilMUX

lcon(), next(), con(), lexits(), lcon(), xcon(), and sees() with reguards to handling Reality Levles were broke. - Fixed

Help for trim() had examples with it's 2nd and 3rds arguments reversed - Fixed

- Thanks accela@AniMUSH

Introduction of REALMS/Reality Levels

- Thanks to Shade@Mediterranian for the code

randextract() handles 5th arg for output and can handle '1' arg passed Cleaned up handling of ndbm.h Improved validation for autoregistration Improved logging Added total commands on @conncheck

- Thanks Meglos@MyrkaMUX (Zenty's concept)

Modified @aconnect/@adisconnect behavior. @aconnect accepts %0 as 1/0 based on existing connection @adisconnect accepts %0 (reason), %1 (time on), %2 (1/0 based on conn) mail/status shows '-' on current message read. @list cmdslogged - shows current individual commands being logged @list powers - shows powers @list depowers - shows depowers @list rlevels - shows rlevels Added '+proof' to mail/write command Cleaned up help with the mail system for easier understanding Added protection to functions that could be abused with poor coding practices Added HILIGHT'ing to puppets when displaying messages.

- Thanks to Rynos@Armageddon

Added LastIP attribute to house the IP address the person last connected from.

- Thanks Jeff@Sandbox

Help fixes for wizhelp on permissions.

- Thanks Jeff@Sandbox

Help fixes for help with regards to arbitrary commands. Improved DoS protection vers. race conditions on connect screen. switch() and switchall() now recognize > and < as math-args (config param)

Additions

— Functions —

rxlevel() - return RX reality level for source check txlevel() - return TX reality level for target check listrlevels() - list all levels hasrxlevel() - return '1' if target has rxlevel() hastxlevel() - return '1' if target has txlevel() cansee() - return '1' if target can see source (reality level based only)

Additions:

— Commands —

@rxlevel - set/remove reality level source check @txlevel - set/remove reality level target check mrpage (mrp) - respond to the player list that you received in a page.

like rpage, this is seperate from lpage

Additions:

— Flags —

NONAME - if set on a target, the name is not displayed.

Additions:

— Powers —

None

Additions:

— De-Powers —

None

Additions:

— Toggles —

None

— Admin params —

reality_level - define new reality level(s). 32 max. wiz_always_real - a wizard is defined as always seeing everything as 'real' def_exit_rx - default exit RX value (1 default) def_exit_tx - default exit TX value (1 default) def_room_rx - default room RX value (1 default) def_room_tx - default room TX value (1 default) def_player_rx - default room RX value (1 default) def_player_tx - default room TX value (1 default) def_thing_rx - default thing RX value (1 default) def_thing_tx - default thing TX value (1 default) validate_host - Specify invalid site-masks for autoregistration emails

- Thanks Zara@UnderGround Labyrinth

log_command_list - Specify commands to individually log partial_conn - Enable/disable @aconnect on partial connects partial_deconn - Enable/disable @adisconnects on partial disconnects secure_functions - Enable/disable security on listed functions

> FOREACH, WHILE, FOLD, FILTER, MAP, STEP, and MIX

max_logins_allowed (mudstate) - absolute ceiling of connections allowed to avoid any type of DoS based attack. This will always be 10 less than the OS can handle.

penn_switches - if enabled, switch() and switchall() will work like PENN and accept < and > as mathmatical operands.

> — BUG FIXES —

filter() would accept '1<blah>' as well as '1'. - Fixed.

> - Thanks Raevnos@M*U*S*H

possible pointer-misalignment with internal messaging with MONITOR - Fixed Rare occurance of getting inside a garbage object (non-crash-bug) - Fixed @mvattr had small bug with copying over itself - Fixed @mvattr had small bug with keeping original copy - Fixed Semaphores didn't do wait time correctly (introduced in p11) - Fixed Time/Create stamps visible by anyone. Shouldn't be. - Fixed LBUF not freed in mail/quota - Fixed @dynhelp not able to parse subdirectories - Fixed (using a '^') @icmd not inherited in all instances - Fixed for everything Some side effects had wrong security/permission checks - Fixed Side effects did not check inheritance for permission - Fixed Iter()/list() and suite did not handle ansi properly - Fixed

elist() has 5th argument (for string seperator)

> - Thanks Talek@M*U*S*H

@icmd has new switches to handle location/zone overriding: /droom - disable commands on room /iroom - ignore commands on room /croom - clear commands on room /lroom - list commands on room /lallroom - list all commands at current location

DoS Protection increased for vattr's and object creation/destruction @wait giving new /until switch to specify exact static time strmath() has two new args. First handles start location, second count Mail uses ~ to evaluate attributes for player targets Enhanced email authorization for autoregistration.

- Thanks Jeff@SandBox

Enhanced page to handle alias displaying

> - Thanks Wolfie@CotM

Pagelock to follow normal methodology when wizard-overrides in effect Improved mail/write +list (proof) interface for mail with BRANDY_MAIL toggle.

- Thanks Belial@Armegeddon

@pemit has /silent switch for PENN compatibility

> Additions

> — Functions —

foreach() - (MUX) added for compatibility ilev() - Returns nest level of an iter()

Additions:

— Commands —

@limit [/vmod /dmod /list /reset] - to limit max @destroy/vattr creation

Additions:

— Flags —

None

Additions:

— Powers —

None

Additions:

— De-Powers —

None

Additions:

— Toggles —

IGNOREZONE - toggles zone/location to enable zone/location command disable/ignore VPAGE - toggles aliases to show/not show in pages you receive. PAGELOCK - toggles pages to normal methodologies when wizard lock overriding

- Thanks Jeff@Sandbox

MAIL_NOPARSE - seperate toggle to break up translating %r's and %t's in mail viewing.

— Admin params —

ignore_zone - globally specify zone ignoring for a command (Note: ignore_zone allows all other ignore_* params for level specifiers.)

disable_zone - globally specify zone disabling for a command global_ansimask - globally define what ansi codes to allow/deny expand_goto - force exit movement to use a 'goto'. max_dest_limit - specify maximum @destroys allowed per player max_vattr_limit - specify maximum _NEW_ vattrs allowed per player hide_nospoof - if '1' you have to control target to see NOSPOOF flag

- Thanks Jeff@SandBox

— BUG FIXES —

buffer issue with @decompile - fixed remove lmath() from help. - fixed

- Thanks Raevnos@M*U*S*H

mail showed cloaked wizzes being connected - fixed

- Thanks Morgan@RhostMUSH Team

moon() didn't handle full moons properly - fixed

- Thanks Jeff@SandBox

isdbref() thought '#' was a valid dbref. - fixed

- Thanks Raevnos@M*U*S*H

Attribute setting issue introduced with P11

- MUCH Thanks Jeff@SandBox

Logging options were a bit skewered with on/off settings. - fixed

- Thanks Sorien@Delphi

Attempted to free mbufs in @disable login area twice. - fixed Parenting fix with possible recursion - fixed

- Thanks Brazil@MUX2

@lock/chown not documented in help - fixed @lock/chown required on CHOWN_OK object. Shouldn't be. - Fixed

-Thanks Rynos@Armageddon

@icmd for players broke with room/location addition - fixed. -Thanks Jeff@SandBox

Cloaked items didn't trigger @startup - fixed. -Thanks Rynos@Armageddon

improved CPU handler for DoS protection

Additions

— Functions —

strfunc(<function>,<string of args>[,<optional seperator for args>) - for lists

Additions:

— Commands —

None

Additions:

— Flags —

None

Additions:

— Powers —

None

Additions:

— De-Powers —

None

— Admin params —

max_cpu_cycles admin param (default 3) cpu_secure_lvl admin param (default 0)

— BUG FIXES —

you could still get into a garbage object - fixed (MINOR) forwardlists were not cleared on @wipe - fixed

mail/write +acc added to allow extending player lists and not replacing. mail/recall[/all] <playerlist> to list messages by player-name you sent to

- Suggested by Julius@Bermuda

functionality for @flagdef for flagname filtering on display and paging. Cleaned up some functionality more cases to valid() (name, attrname, playername) filler to columns() (new argument)

- Thanks Morgan@BrazilMUX

'save' to helpfile showing that you do not need to save

- Suggested by Jamie@AdminMUSH

Additions

— Functions —

caseall() - works like switchall() but for case (Taken from PENN) cand() - works like and() but stops processing on first 'FALSE' (from PENN) cor() - works like or() but stops processing on first 'TRUE' (from PENN) moon() - based on the POM code from berkley isword() - returns 'TRUE' if entire string is all alpha (or has a hyphon) itext() - returns nth arg (text '##') of an iter() (from PENN) inum() - returns nth arg (num '#@') of an iter() (from PENN) modulo() - returns the modulus of the numbers (from PENN)

Additions:

— Commands —

None

Additions:

— Flags —

NO_PARSE - attribute flag that stops processing/evaluation of %0-%9 in $commands. SAFE - attribute flag that stops modification of attribute it's set on (TM 3.0) SHOWFAILCMD - when set on object any matching failed $cmd uses the @ufail suite.

Additions:

— Powers —

None

Additions:

— Toggles —

MAIL_STRIPRETURN - when combining lines uses spaces instead of carrage returns PENN_MAIL - when sending mail, use PENN like style

— Admin params —

guest_namelist - specifies a dynamic namelist for guests (with protection) hackattr_nowiz - defines if '_attr' is wiz only or follows normal rules hackattr_see - defines if '_attr' is viewable by wizard only. penn_playercmds - $commands on player work only for that player

or inventory (from PENN)

— BUG FIXES —

Bug with dynhelp(). Player (3rd arg) never resolved correctly - fixed

- Thanks Svlatmaer@BTW

Possible (and very rare) overflow conditions with certain wiz commands - fixed SIGSEGV bug with recursive @functions - fixed When @toggled MONITOR_BAD, MONITOR_FAIL doubled up failed connections - fixed Malaligned pointer in command.c. Non-crash issue. - fixed setq() registers weren't cleared for extreamly fast command input - fixed

- Thanks Brazil@BrazilMUX

ex thing/*sta* returns 'no attribs found' if tstamps enabled - fixed enhanced security for .txt file reading/verification (possible DoS) - fixed attrib flag DARK could not be unset by non-god. Only #1 can set it now - fixed encrypt/decrypt really mangled with how it passed key - fixed ——— [10/12/2000] RhostMUSH 3.2.4 p8 Update File

—- Changes —-

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lnum() and lnum2() now can handle negative numbers. @list options shows if the COMMAND flag is used. NOMOD-IFY can be configured to be settable/unsettable/modifiable by imm only. vector functions (vadd, etc) that return a list now recognize output seps. MAX_ARGS in 'externs.h' may be changed to increase the total number of arguments

> functions like switch() may take. MAX_ARGS is currently defaulted to '30' though MUX 2.0 has it set to '100'. This HAS to be a compile time change else possible SIGSEGV's could happen.

mail/write +editall=old,new - argument to mail/write added. Modifies ALL lines. mail/write +feditall=old,new - modify ALL matches on ALL lines. mail/write +fedit #=old,new - modify ALL matches on given line. mail/write +cc/+bcc=new - if FORWARDING or SENDING (not reply!) will allow the

> user to redefine who the message is being sent out to.

_ATTR can be compile-time added to be wiz-only settable/modifiable attributes. Modified mail/write +justify, +insert, +edit, +editall to rehandle line count Made option to make harder password guessing. dice() takes '1' for expanded, '2' for expanded w/o totals, and optional output

> seperator. Also has optional argument for low-limit Can mimic TM 3.0's lrand() function.

modified connecting to @program based on toggle. added modified/created with 'examine' and 'examine/brief' and 'examine thing/*'

> Additions

> — Functions —

mailalias() - returns the dbref# list of players in the given global mail alias

> • Suggested by Stormwolf@CotF

programmer() - returns the dbref# of thing that put target in @program vcross() - taken from TinyMUX 2.0 (with permission) switchall() - idea taken from TinyMUSH 3.0 (coded from scratch) brackets() - idea taken from PENN 1.7.3 @@() - works like null() but does not evaluate (idea from PENN 1.7.3)

> Additions:

> — Commands —

@flagdef - define flag permission levels (/set, /unset, /see) @dynhelp - dynamically read a specified <file>.txt file (needs matching .indx!)

> Additions:

> — Flags —

COMMANDS - optional #ifdef to define what uses commands or not (TinyMUSH compat)

> **uses -DENABLE_COMMAND_FLAG**

> > • Idea from TinyMUSH 2.2.4

NO_CLONE - attribute flag to stop attributes from copying over when @cloned MARKER0 through MARKER9 - idea from TinyMUSH 3.0 BOUNCE - allows players to pass what they hear to their contents w/o effecting

> @ahear/@amhear/etc.

> Additions:

> — Powers —

None.

> Additions:

— Toggles —

MONITOR_BAD - monitor failed connections/creations to non-existant players PROG_ON_CONNECT - reverses the current global logic of program and connecting.

— Admin params —

imm_nomod - when enabled (default disabled) specifies that only immortal can set/unset the NOMODIFY flag and only immortals can modify things set NOMODIFY. This will allow NOMODIFY to mimic CONSTANT ala TM 3.0

paranoid_exit_linking - when enabled, you MUST control exit to link. This includes UNLINKED exits. Also, exits won't be @chowned to you automatically. (Default disabled)

notonerr_return - when DISABLED (default enabled) not() returns a '0' for any function returning #-1.

safer_passwords - requires passwords be 5+ chars long and have one upper,

> **one lower, and one special character.**

> > • Idea from TinyMUSH 2.2.4

max_sitecons - (default 50) specifies the maximum # of port connections to site of that given site.

— BUG FIXES —

NOMODIFY wasn't strict enough - fixed BACKSTAGE/NOBACKSTAGE didn't handle @zones - fixed create() didn't check command permissions first for @dig, @open, and @pcreate put a temp fix for a possible SIGSEGV bug.

@set now recognizes the following attribute flags: GOD IMMORTAL WIZARD (suggested by Stormwolf@CotF) ROYALTY (alias for WIZARD) COUNCILOR ARCHITECT GUILDMASTER HIDDEN DARK

> Additions

> — Functions —

None.

> Additions:

> — Commands —

None.

> Additions:

> — Flags —

None.

> Additions:

> — Powers —

None.

> Additions:

> — Toggles —

None. — Admin params —

None. — BUG FIXES —

@list options did not show RESTRICT_HOME config setting. Fixed

> • Reported by Mercutio@ShatteredCathedrals

@list site_information now shows DNS blocking

> Additions

— Functions —

None.

Additions:

— Commands —

None.

Additions:

— Flags —

None.

Additions:

— Powers —

None.

Additions:

— Toggles —

None. — Admin params —

forbid_host - allows DNS entry/modify for forbidding hosts register_host - allows DNS entry/modify for registered hosts autoreg_host - allows DNS entry/modify for disallowing autoreg to hosts noguest_host - allows DNS entry/modify for disallowing guests to hosts suspect_host - allows DNS entry/modify for suspect hosts

— BUG FIXES —

ansi() didn't recognize 'u' for underline. Fixed.

- Reported by LadyDraconis@BermudaByNight

@program had small issue with prompt storage. Fixed. autoreg file inclusion didn't count total lines right. Fixed.

- Reported by Rachel@AdminMUSH

hastoggles(), haspowers(), and hasdepowers() didn't work. Fixed.

New /noauth and /nodns switches to @site Better timeout conditions for AUTH lookups. @list site_information now shows additional information

Additions

— Functions —

None.

Additions:

— Commands —

None.

Additions:

— Flags —

None.

Additions:

— Powers —

None.

Additions:

— Toggles —

None. — Admin params —

noauth_site – specifies site and mask that AUTH lookups are not to be performed nodns_site – specifies site and mask that DNS lookups are not to be performed

— BUG FIXES —

AUTH hung if remote server was configured wrong. Fix put in around the OS limitation to handle this. Command substitution (%c/%x) could cause a SIGSEGV at random times. Fixed. ————————————————————————————————— [04/15/2000] RhostMUSH 3.2.4 p4 Update File

—- Changes —-

wizhelp has new topic for setting up guests (GUEST SETUP) help has help for differences/useful (DIFFERENCE/USEFUL)

• Suggested by Sycorax@ShatteredCathedrals

filter() now supports an output seperator lnum() and lnum2() optionally return NULL if given a '0'.

• Suggested by Gorath@Rhostshyl

mask() now takes '~' for adding 1's comp, '1' for 1's and '2' for 2's. mailquick() takes 3rd argument for MUX mail() compatibility. news/articlelife takes 'forever' as a valid argument. mail/status takes /subject, (U)nread, (N)ew, (B)oth new/unread, (S)aved,

(M)arked, and (O)ld mail as optional search params.

mail/number takes same new args as mail/status news/read now marks messages as 'read'. @ansiname now allows raw ansi (under controlled circumstances) dig(), create(), open(), clone() all optionally return dbref#'s.

• Suggested by Corum@Underground

@list options now shows more (and valuable) information. @function/list now shows flags for privalaged/preserved functions. mail/status and mail/read now show connected players. mail/write and - now show how many characters you have written. mail/forward and mail/reply now recognize the BRANDY_MAIL @toggle.

Additions

— Functions —

listmatch(<string>,<wildcard>[,<delimiter>]) setqmatch(<string>,<wildcard>[,<delimiter>]) listnewsgroups([<player>]) inprogram(player)

Additions:

— Commands —

@program (idea from MUX) @quitprogram (idea from MUX) @progprompt

• Suggested by Zara@Underground

@extansi train

• Suggested by Trey@GameHendge

@function/preserve (idea from MUX) +help (hardcode) (idea from MUX)

Additions:

— Flags —

None added.

Additions:

— Powers —

None added.

Additions:

— Toggles —

PROG (idea from MUX) NOSHPROG IMMPROG

Alias Additions

— Functions —

None added.

Alias Additions

— Commands —

@prog aliased to @program

Alias Additions — Flags —

None added.

— Admin params —

login_to_prog noshell_prog

- Suggested by Draken-Korin@Underground

sidefx_returnval nospam_connect (idea from PENN) noregist_onwho

- Suggested by Rachel@AdminMUSH

lnum_compat mailinclude_file

- Suggested by Rachel@AdminMUSH

must_unlquota

— BUG FIXES —

news/articlelife not in wizhelp

- Reported by Rachel@AdminMUSH

filter() did not correctly parse arguments in some instances – fixed

- Reported by Troll@Bermuda

@set thing/attr=_thing/attr would on rare occurances not work – fixed

- Reported by Troll@Bermuda

lock() would not parse the second argument in some occurances – fixed

- Reported by Cerebus@Bermuda

mail/reply didn't function right when BRANDY_MAIL toggled – fixed setunion() would not parse 3rd/4th args correctly on rare occurances –fixed

- Reported by Tyr@Forgotten (Thanks for the patch)

news/articlelife wouldn't reset articlelife with '-1'. – fixed

—- Changes —-

Make sure to make the appropiate aliases:

@flag is not listed in 'wizhelp commands'

> • reported by Stormwolf@Children

remtype(<string>,<type>[,<sep>,<osep>])

> • suggested by Stormwolf@Children

name(<target>[,<newname>]) examine/quick - Previous /brief functionality examine/brief - Modified for MUX/PENN compatibility

> • suggested by Rachel@AdminMUSH

@function[/list] - for PENN compatibility @pemit/zone[/list] <zone(s)> - if zonemaster - all rooms in zone.

> if !zonemaster - specified zone.

@dolist/notify 'mail/next -' - reads previous mail 'mail/zap -' - marks current message and reads previous mail

> Additions

> — Functions —

mailquick(<player>[,<folder>]) (wiz only) eval(<object>,<attr>) or eval(<string>) translate(<string>,<(s)pace/un(p)arse>) valid(name,<string>) entrances(target[,(a)ll/(r)oom/(t)hing/(p)layer/(e)xit]) graball(<string>,<wildcard>[,<sep>]) remit(<list of rooms>,<string>) rnum(<perspective>,<target>) wipe(<obj>[/attr]) destroy(<obj>) step() (borrowed and modified from TinyMUSH 3.0) localize(<string>) null(<string>) ladd(<string>[,<sep>]) lsub(<string>[,<sep>]) lmul(<string>[,<sep>]) ldiv(<string>[,<sep>]) land(<string>[,<sep>]) lavg(<string>[,<sep>]) lmax(<string>[,<sep>]) lmin(<string>[,<sep>]) lor(<string>[,<sep>]) lxor(<string>[,<sep>]) lnor(<string>[,<sep>]) lxnor(<string>[,<sep>]) lastcreate(<target>,<(r)oom, (t)hing, (e)xit, (p)layer) ncomp(<num>,<num>) streq(<str>,<str>) while() (borrowed and modified from TinyMUSH 3.0)=20 xcon(<target>[/<switch>],<start>,<count>) modifystamp(<target>) createdstamp(<target>) inzone(<zone>) zemit(<list of zones>,<string>) zwho(<zone>) zfun([<zone>/]<attr>[,<args>]) zfun2([<zone>/]<attr>[,<args>]) zfunlocal([<zone>/]<attr>[,<args>]) zfun2local([<zone>/]<attr>[,<args>]) zfundefault([<zone>/]<attr>,<default>[,<args>]) zfun2default([<zone>/]<attr>,<default>[,<args>]) zfuneval([<zone>/]<attr>/<level>[,<args>]) zfunldefault([<zone>/]<attr>,<default>[,<args>]) zfunl2default([<zone>/]<attr>,<default>[,<args>])

> Additions:

> — Commands —

@hide[/on/off] - For PENN compatibility @saystring - define what is substituted instead of 'says'

> Additions:

> — Flags —

NOWHO (internal) - mark who is @hidden LOGIN - bypass @disable logins ZONECONTENTS - makes zonemaster behave like master room BACKSTAGE - check to see if auto-inherited to ownership NOBACKSTAGE - marker for backstage checks ANONYMOUS - return 'Someone' when cloaked when talk/say

> Additions:

> — Powers —

NOWHO - specify who can @hide EXAMINE_FULL - examine anything but #1, cloaked, and noexamine things FULLTEL - teleport anywhere but #1 and cloaked locations.

> Additions:

> — Toggles —

BRANDY_MAIL - send mail with 'mail user-list=3Dsubject' methodology FORCEHALTED - force someone who is halted

Alias Additions

— Functions —

subeval() aliased to eval() grepi() aliased to grep() zone() aliased to lzone() element aliased to elements() if() aliased to ifelse() matchall() aliased to totmatch() nonzero() aliased to ifelse() filterbool() aliased to filter() landbool() aliased to land() lorbool() aliased to lor() lnorbool() aliased to lnor() andbool() aliased to and() notbool() aliased to not() xorbool() aliased to xor() loop() aliased to list() enumerate() aliased to elist() mean() aliased to avg()

Alias Additions

— Commands —

@brief aliased to examine/brief @lemit aliased to @emit/room @remit aliased to @pemit/contents/list @zemit aliased to @pemit/zone/list

Alias Additions — Flags —

NO_COMMAND alias to NOCOMMAND

— Admin params —

mail_tolist (default 0) - enable/disable To: <players> in mail = automatically mail_default (default 0) - change 'mail' from mail/quick to mail/status

— BUG FIXES —

depower - tel_anywhere (broke - fixed) look - could see cloaked things if given long-finger ability (fixed) recover objects - could be examined to find names of them and owner (fixed) grab() - crashed server if given only one argument - fixed go - couldn't use 'go' through parent exits before

- Reported by Medwyn@Underground

ueval() - fixed missing LBUF free mail/write +list - gave erraneous results - fixed lexits() - won't show exits set PRIVATE at the 'home' of those exits.

- Reported by Medwyn@Underground

min() - value shoved a double in an int

- Reported by Stormwolf@Children

max() - value shoved a double in an int

- Reported by Stormwolf@Children

wmail/size - tried to free null pointer

- Reported by Mercutio@Shattered

host sites over 50 characters would cause the host parameter to not properly null terminate. - fixed. @open would, under rare circumstances, clobber the return exit from how tprintf() buffers. -fixed. andflags() and orflags() didn't escape out '2' or '1' right. - fixed

1.19 Historical Non-Disclosure Agreement

The following NDA comes from the time when RhostMUSH was not publially available. It is preserved here for historical reasons. We are suckers for looking back at things. :) –Ambrosia

1) I agree, to not give out the code, in part or in full, in any form of medium, to anyone or anything not previously allowed by the developers.

2) I agree, to not let others look at the code, in part or in full, in any form of medium, to anyone or anything not previously allowed by the developers.

3) I am aware that any modifications I make to the code is _FULLY_ permitted, and that I do _NOT_ have to return said patches to the developers.

Note: The Rhost developers would like to see what was added, and possibly look at adding them to the main distro if we see others would like it (with full credits to you), but we belive once you have the code, you should be allowed to play with it fully as long as the first two rules are kept.

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2.1 Indices and tables

- genindex
- modindex
- search