pimd | Change Log

Ahmed Helmy, George Edmond Eddy, Pavlin Ivanov Radoslavov, and Markus Veranen

March 10, 2016

Version 2.3.2: March 10, 2016

Bug fix release. All users should upgrade, in particular FreeBSD users!

Changes

- Minor code cleanup and readability changes to simplify the code.
- Update to libite v1.4.2 with improved `min()/max()` macros
- Use `-Wextra` not `-Werror` in default `CFLAGS`, this to ensure that pimd still builds OK on newer and more pedantic compilers
- Update man page and example 'pimd.conf' with details on 'rp-candidate' 'bsr-candidate', two very important settings for correct operation.

Bug Fixes

- Issue #57: Multicast routing table not updated on FreeBSD. Introduced with issue #23, in pimd v2.2.0. Too intrusive changes altered handling (forwarding) of PIM register messages. This only affects BSD systems, in particular FreeBSD 10.2 (current), or any FreeBSD < 11.0
- Issue #63: Mika Joutsenvirta mailto:mika.joutsenvirta@insta.fi found and fixed serious issues with the PIM Assert timeout handling.
- Issue #65: Missing slash in config file path when using env. variable
- Issue #66: Make it possible to run `pimd` without a configuration file. If `pimd` cannot find its configuration file it will use built-in fallback settings for `bsr-candidate` and `rp-candidate`. This to ensure you do not end up with a non-working setup. To disable `bsr-candidate` and `rp-candidate`, simply leave them out of your config file, and make sure `pimd` can find the file.
- Issue #69: Rate limit only what is actually logged. The `logit()` function counted filtered messages, causing long periods of silence for no reason. Fix by Apollon Oikonomopoulos mailto:apollon@skroutz.gr

Version 2.3.1: November 15, 2015

Bug fix release.

Changes

- Let build system handle missing libite GIT submodule
- Issue #61: Debian packaging moved to https://github.com/bobek/pkg-pimd

Bug Fixes

- Issue #53: Build problem with Clang on FreeBSD
- Issue #55: Default config uses `/etcpimd.conf` instead of `/etc/pimd.conf`. Slashes added and now `pimd -h` lists the default path instead of a hard coded string.
- Issue #60: Fix minor spelling errors.

Version 2.3.0: July 31, 2015 – *PIM-SSM & IGMPv3 release!*

The significant new features in this release would not have been possible if not for the hard work of Markus Veranen mailto:markus.veranen@gmail.com

Tested on Ubuntu 14.04 (GLIBC/Linux 3.13), Debian 8.1 (GLIBC/Linux 3.16), FreeBSD, NetBSD, and OpenBSD.

Changes and New Features

- Support for PIM-SSM and IGMPv3, by Markus Veranen

- IGMPv3 is now default, use `phyint ifname igmpv2` for old behaviour

- Default IGMP query interval has changed from 125 sec to 12 sec

  In `pimd.conf:` `igmp-query-interval <SEC>`

- Default IGMP querier timeout has changed from 255 sec to 42 sec

  In `pimd.conf:` `igmp-querier-timeout <SEC>`

- The built-in IGMP *robustness value* changed from 2 to 3

- Support for changing the PIM Hello interval, by Markus Veranen

  In `pimd.conf:` `hello-interval <SEC>`

- Support for multiple multicast routing tables, and running multiple pimd instances, by Markus Veranen. (Only supported on Linux atm.)

- Support for advertising, and acting upon changes to, Generation ID in PIM Hello messages, by Markus Veranen

- Support for advertising *DR Priority* option in PIM Hello messages. If all routers on a LAN send this option this value is used in the DR election rather than the IP address. The priority is configured per `phyint`. This closes the long-standing issue #5.

- Distribution archive format changed from XZ to Gzip, for the benefit of OpenBSD that only ships Gzip in the base system.

New pimd.conf syntax!

The `pimd.conf` syntax has been changed in this release. Mainly, the configuration file now use dashes - instead of underscore _ as word separators. However several settings have also been renamed to be more familiar to commands used by major router vendors:

`bsr-candidate` replaces `cand_bootstrap_router`

`rp-candidate` replaces `cand_rp`

`group-prefix` replaces `group_prefix`

`rp-address` replaces `rp_address`

`spt-threshold` replaces the two deprecated `switch_register_threshold` and `switch_data_threshold` settings

`hello-interval` replaces `hello_period`

`default-route-distance` replaces `default_source_preference`

`default-route-metric` replaces `default-source-metric`

Also, for `phyint` the `preference` sub-option has been replaced with the less confusing `distance` and `ttl-threshold` replaces `threshold`. See the README or the man page for more information on the metric preference and admin distance confusion.

Note: *The `pimd.conf` parser remains backwards compatible with the old syntax!*

Compile Time Features

The following are new features that must be enabled at compile time, using the `configure` script, to take effect. For details, see `./configure --help`

`--prefix=PATH` Standard prefix to be used at installation, default `/usr/local`

`--sysconfdir=PATH` Prefix path to be used for `pimd.conf`, default `/etc`, unless `--prefix` is given.

`--embedded-libc` Enable uClib or musl libc build, on Linux.

`--disable-exit-on-error` Allow pimd to continue running despite encountering errors.

`--disable-pim-genid` Disable advertisement of PIM Hello GenID, use for compatibility problems with older versions of pimd.

`--with-max-vifs=MAXVIFS` Raise max number of VIFs to MAXVIFS.

> **Note:** this requires raising MAXVIFS in the kernel as well! Most kernels cannot handle >255, if this is a problem, try using multiple multicast routing tables instead.

`--disable-masklen-check` Allow tunctl VIFs with masklen 32.

Bug Fixes

- Fix issue #40: FTBS with `./configure --enable-scoped-acls`
- Properly support cross compiling. It is now possible to actually define the `$CROSS` environment variable when calling `make` to allow cross compiling pimd. Should work with both GCC and Clang. Tested on Ubuntu, Debian and FreeBSD.

Version 2.2.1: April 20, 2015

Bug Fixes

- Fix another problem with issue #22 (reopened), as laid out in issue #37. This time the crash is induced when there is a link down event. Lot of help debugging the propblem by @mfspeer, who also suggested the fix – to call `pim_proto.c:delete_pim_nbr()` in `vif.c:stop_vif()` instead of just calling free.

- Fix issue with not checking return value of `open()` in daemonizing code in `main()`, found by Coverity Scan.

- Fix issue with scoped `phyint` in `config.c`, found by Coverity Scan. The `masklen` may not be zero, config file problem, alert the user.

Version 2.2.0: December 28, 2014

Changes & New Features

- Support for IP fragmentation of PIM register messages, by Michael Fine, Cumulus Networks
- Support `/LEN` syntax in `phyint` to complement `masklen LEN`, issue #12
- Add support for /31 networks, point-to-point, thanks to Apollon Oikonomopoulos
- Remove old broken SNMP support
- OpenBSD inspired cleanup (deregister)
- General code cleanup, shorten local variable names, func decl. etc.
- Support for router alert IP option in IGMP queries
- Support for reading IGMPv3 membership reports
- Update IGMP code to support FreeBSD >= 8.x
- Retry read of routing tables on FreeBSD
- Fix join/leve of ALL PIM Routers for FreeBSD and other UNIX kernels
- Tested on FreeBSD, NetBSD and OpenBSD
- Add very simple homegrown configure script
- Update and document support for `rp_address`, `cand_rp`, and `cand_bootstrap_router`
- Add new `spt_threshold` to replace existing `switch_register_threshold` and `switch_data_threshold settings`. Cisco-like and easier to understand

Bug Fixes

- Fix to avoid infinite loop during unicast send failure, by Alex Tessmer
- Fix bug in bootstrap when configured as candidate RP, issue #15
- Fix segfault in `accept_igmp()`, issue #29
- Fix default source preference, should be 101 (not 1024!)
- Fix `ip_len` handling on older BSD's, thanks to Olivier Cochard-Labbé, issue #23
- Fix default prefix len in static RP example in `pimd.conf`, should be /4
- Fix issue #31: Make IGMP query interval and querier timeout configurable
- Fix issue #33: pimd does not work in background under FreeBSD
- Fix issue #35: support for timing out other queriers from mrouted
- Hopefully fix issue #22: Crash in (S,G) state when neighbor is lost
- Misc. bug fixes thanks to Coverity Scan, static code analysis tool https://scan.coverity.com/projects/3319

Version 2.1.8: October 22, 2011

Changes & New Features

- Update docs of static Rendez-Vous Point, `rp_address`, configuration in man page and example `pimd.conf`. Thanks to Andriy Senkovych mailto:andriysenkovych@gmail.com and YAMAMOTO Shigeru mailto:shigeru@iij.ad.jp

- Replaced `malloc()` with `calloc()` to mitigate risk of accessing junk data and ease debugging. Thanks to YAMAMOTO Shigeru mailto:shigeru@iij.ad.jp

- Extend .conf file `rp_address` option with `priority` field. Code changes and documentation updates by YAMAMOTO Shigeru mailto:shigeru@iij.ad.jp

Bug Fixes

- A serious bug in `pim_proto.c:receive_pim_register()` was found and fixed by Jean-Pascal Billaud. In essence, the RP check was broken since the code only looked at `my_cand_rp_address`, which is not set when using the `rp_address` config. Everything works fine with auto-RP mode though. This issue completely breaks the register path since the JOIN(S,G) is never sent back ...

- Fix FTBFS issues reported from Debian. Later GCC versions trigger unused variable warnings. Patches and cleanup Antonin Kral mailto:a.kral@bobek.cz

Version 2.1.7: January 9, 2011

Changes & New Features

- The previous move of runtime dump files to `/var/lib/misc` have been changed to `/var/run/pimd` instead. This to accomodate *BSD systems that do not have the `/var/lib` tree, and also recommended in the Filesystem Hierarchy Standard, http://www.pathname. com/fhs/pub/fhs-2.3.html#VARRUNRUNTIMEVARIABLEDATA

Version 2.1.6: January 8, 2011

Changes & New Features

- Debian package now conflicts with `smcroute`, in addition to `mrouted`. It is only possible to run one multicast routing daemon at a time, kernel limitation.

- The location of the dump file(s) have been moved from `/var/tmp` to `/var/lib/misc` due to the insecure nature of `/var/tmp`. See more below.

Bug Fixes

- `kern.c:k_del_vif()`: Fix build error on GNU/kFreeBSD

- CVE-2011-0007: Insecure file creation in `/var/tmp`. "On USR1, pimd will write to `/var/tmp/pimd.dump` a dump of the multicast route table. Since `/var/tmp` is writable by any user, a user can create a symlink to any file he wants to destroy with the content of the multicast routing table."

Version 2.1.5: November 21, 2010

Changes & New Features

- Improved error messages in kern.c
- Renamed CHANGES to ChangeLog

Bug Fixes

- Import mrouted fix: on GNU/Linux systems (only!) the call to `kern.c:k_del_vif()` fails with: `setsockopt MRT_DEL_VIF on vif 3: Invalid argument`. This is due to differences in the Linux and *BSD `MRT_DEL_VIF` API. The Linux kernel expects to receive a `struct vifctl` associated with the VIF to be deleted, *BSD systems on the other hand expect to receive the index of that VIF.

  Bug reported and fixed on mrouted by Dan Kruchinin `mailto:dkruchinin@acm.org`

Version 2.1.4: September 25, 2010

Changes & New Features

- Updates for support on Debian GNU/kFreeBSD, FreeBSD kernel with GNU userland.

Bug Fixes

- Lior Dotan mailto:liodot@gmail.com reports that pimd 2.1.2 and 2.1.3 are severely broken w.r.t. uninformed systematic replace of `bcopy()` with `memcpy()` API.

Version 2.1.3: September 8, 2010

Changes & New Features

- `debug.c:syslog()`: Removed GNU:ism %m, use `strerror(errno)` instead.
- Cleanup and ansification of a couple of files: rp.c, mrt.c, vif.c, route.c
- Initialize stack variables to silence overzealous GCC on PowerPC and S/390. Debian bug 595584, this closes pimd issue #3 on GitHub.

Bug Fixes

- Merge bug fix for static-rp configurations from Kame's pim6sd route.c r1.28
- Close TODO item by merging in relevant changes from Kame's pim6sd `vif.c r1.3`
- Tried fixing `debug.c:logit()` build failure on Sparc due to mixup in headers for `tv_usec` type.

Version 2.1.2: September 4, 2010

Changes & New Features

- License change on mrouted code from OpenBSD team => pimd fully free under the simlified 3-clause BSD license! This was also covered in v2.1.0-alpha29.17, but now all files have been updated, including LICENSE.mrouted.
- Code cleanup and ansification.
- Simplified Makefile so that it works seamlessly on GNU Make and BSD PMake.
- Replaced all calls to `bzero()` and `bcopy()` with `memset()` and `memcpy()`.
- Use `getopt_long()` for argument parsing.
- Add, and improve, -h,–help output.
- Add -f,–foreground option.
- Add -v,–version option.
- Add -l,–reload-config which sends SIGHUP to a running daemon.
- Add -r,–show-routes which sends SIGUSR1 to a running daemon.
- Add -q,–quit-daemon which sends SIGTERM to a running daemon.
- Make it possible to call pimd as a regular user, for –help and –version.
- Man page cleaned up, a lot, and updated with new options.

Bug Fixes

- Replaced dangerous old string functions with safer `snprintf()` and `strlcpy()`
- Added checks for `malloc()` return values, all over the code base.
- Fixed issues reported by Sparse (CC=cgcc).
- Make sure to retry syscalls `recvfrom()` and `sendto()` on signal (SIGINT).
- Fix build issues on OpenBSD 4.7 and FreeBSD 8.1 thanks to Guillaume Sellier.
- Kernel include issues on Ubuntu 8.04, Linux <= 2.6.25, by Nikola Knežević
- Fix build issues on NetBSD

Version 2.1.1: January 17, 2010

Merged all patches from http://lintrack.org.

Changes & New Features

- Bumping version again to celebrate the changes and make it easier for distributions to handle the upgrade.
- `002-better-rp_address.diff`: Support multicast group address in static Rendez-Vous Point .conf option.
- `004-disableall.diff`: Add -N option to pimd.
- `005-vifenable.diff`: Add enable keyword to phyint .conf option.

Bug Fixes

- `001-debian-6.diff`: Already merged, no-op - only documenting in case anyone wonders about it.
- `003-ltfixes.diff`: Various bug fixes and error handling improvements.
- `006-dot19.diff`: The lost alpha29.18 and alpha29.19 fixes by Pavlin Radoslavov.

Version 2.1.0, January 16, 2010

Changes & New Features

- Integrated the latest Debian patches from `pimd_2.1.0-alpha29.17-9.diff.gz`
- Fixed the new file include/linux/netinet/in-my.h (Debian) so that the #else fallback uses the system netinet/in.h, which seems to work now.
- Bumped version number, this code has been available for a while now.

Version 2.1.0-alpha29.19: January 14, 2005

Bug Fixes

- Don't ignore PIM Null Register messages if the IP version of the inner header is not valid.
- Add a missing bracket inside rsrr.c (a bug report and a fix by mailto:seyon@oullim.co.kr)

Version 2.1.0-alpha29.18: May 21, 2003

Changes & New Features

- Compilation fix for Solaris 8. Though, no guarantee pimd still works on that platform.
- Define `BYTE_ORDER` if missing.
- Update include/netinet/pim.h file with its lastest version
- Update the copyright message of `include/netinet/pim_var.h`

Version 2.1.0-alpha29.17: March 20, 2003

Changes & New Features

- The mrouted license, LICENSE.mrouted, updated with BSD-like license!! Thanks to the OpenBSD folks for the 2 years of hard work to make this happen:

  http://www.openbsd.org/cgi-bin/cvsweb/src/usr.sbin/mrouted/LICENSE

- Moved the pimd contact email address upfront in README. Let me repeat that here: If you have any questions, suggestions, bug reports, etc., do NOT send them to the PIM IETF Working Group mailing list! Instead, use the contact email address specified in README.

Version 2.1.0-alpha29.16: February 18, 2003

Bug Fixes

- Compilation bugfix for Linux. Bug report by Serdar Uezuemcue mailto:serdar@eikon.tum.de

Version 2.1.0-alpha29.15: February 12, 2003

Bug Fixes

- Routing socket descriptor leak. Bug report and fix by SUZUKI Shinsuke mailto:suz@crl.hitachi.co.jp; incorporated back from pim6sd.
- PIM join does not go upstream. Bug report and fix by SUZUKI Shinsuke mailto:suz@crl.hitachi.co.jp; incorporated back from pim6sd.

```
[problem]
PIM join does not go upstream in the following topology, because oif-list
is NULL after subtracting iif from oif-list.

    receiver---rtr1---|
                rtr2---|---rtr3----sender

            rtr1's nexthop to sender = rtr2
            rtr2's nexthop to sender = rtr3

[reason]
Owing to a difference between RFC2362 and the new pim-sm draft.
[solution]
Prunes iif from oiflist when installing it into kernel, instead of
PIM route calculation time.
```

Version 2.1.0-alpha29.14: February 10, 2003

Bug Fixes

- Bugfix in calculating the netmask for POINTOPOINT interface in config.c. Bug report by J.W. (Bill) Atwood mailto:bill@cs.concordia.ca
- `rp.c:rp_grp_match()`: SERIOUS bugfix in calculating the RP per group when there are a number of group prefixes in the Cand-RP set. Bug report by Eva Pless mailto:eva.pless@imk.fraunhofer.de

Version 2.1.0-alpha29.13: November 7, 2002

Bug Fixes

- Bugfix in rp.c `bootstrap_initial_delay()` in calculating BSR election delay. Fix by SAKAI Hiroaki mailto:sakai.hiroaki@finet.fujitsu.com

Version 2.1.0-alpha29.12: September 26, 2002

Bug Fixes

- Increase size of send buffers in the kernel. Bug report by Andrea Gambirasio mailto:andrea.gambirasio@softsolutions.it

Version 2.1.0-alpha29.11: July 8, 2002

Bug Fixes

Bug reports and fixes by SAKAI Hiroaki mailto:sakai.hiroaki@finet.fujitsu.com

- `init_routesock()`: Bugfix: initializing a forgotten variable. The particular code related to that variable is commented-out by default, but a bug is a bug.

- `main.c:restart()`: Bugfix: close the `udp_socket` only when it is is different from `igmp_socket`.

- `main.c:main()`: if SIGHUP signal is received, reconstruct readers and nfds

- Three serious bug fixes thanks to Jiahao Wang mailto:jiahaow@yahoo.com.cn and Bo Cheng mailto:bobobocheng@hotmail.com:

  - `pim_proto.c:receive_pim_join_prune()`: two bugfixes related to the processing of (*,*,RP)

  - `pim_proto.c:add_jp_entry()`: Bugfix regarding adding prune entries

- Remove the FTP URL from the various README files, and replace it with an HTTP URL, because the FTP server on catarina.usc.edu is not operational anymore.

Version 2.1.0-alpha29.10: April 26, 2002

Bug Fixes

- Widen the space for "Subnet" addresses printed under "Virtual Interface Table"

- Added (commented-out code) to enable different interfaces to belong to overlapping subnets. See around line 200 in config.c

- Bugfix in handling of Join/Prune messages when there is one join and one prune for the same group. Thanks to Xiaofeng Liu mailto:liu_xiao_feng@yahoo.com.

Version 2.1.0-alpha29.9: November 13, 2001

Changes & New Features

First three entries contributed by Hiroyuki Komatsu mailto:komatsu@taiyaki.org

- Print line number if there is conf file error.

- If there is an error in the conf file, pimd won't start.

- GRE configuration examples added to README.config.

- New file README.debug (still very short though).

Bug Fixes

- Increase the config line buffer size to 1024. Bug fix by Hiroyuki Komatsu mailto:komatsu@taiyaki.org

Version 2.1.0-alpha29.8: September 16, 2001

Changes & New Features

- Better log messages for point-to-point links in config.c. Thanks to Hitoshi Asaeda mailto:asaeda@yamato.ibm.com

Version 2.1.0-alpha29.7: September 10, 2001

Changes & New Features

- Added "phyint altnet" (see pimd.conf for usage) for allowing some senders look like directly connected to a local subnet. Implemented by Marian Stagarescu mailto:marian@bile.cidera.com
- Added "phyint scoped" (see pimd.conf for usage) for administartively disabling the forwarding of multicast groups. Implemented by Marian Stagarescu mailto:marian@bile.cidera.com
- The License has changed from the original USC to the more familiar BSD-like (the KAME+OpenBSD guys brought to my attention that the original working in the USC license "...and without fee..." is ambiguous and makes it sound that noone can distribute pimd as part of some other software distribution and charge for that distribution.
- RSRR disabled by default in Makefile

Bug Fixes

- Memory leaks bugs fixed in rp.c, thanks to Sri V mailto:vallepal@yahoo.com
- Compilation problems for RedHat-7.1 fixed. Bug report by Philip Ho mailto:cbho@ie.cuhk.edu.hk
- PID computation fixed (it should be recomputed after a child `fork()`). Thanks to Marian Stagarescu mailto:marian@bile.cidera.com
- `find_route()`-related bug fixes (always explicitly check for NULL return). Bug report by Marian Stagarescu mailto:marian@bile.cidera.com
- Bug fix re. adding a local member with older ciscos (in `add_leaf()`). Bug report by Marian Stagarescu mailto:marian@bile.cidera.com
- Added explicit check whether `BYTE_ORDER` in pimd.h is defined. Bug report by mailto:mistkhan@indiatimes.com

Version 2.1.0-alpha29.6: May 4, 2001

Bug Fixes

- Bug fixes in processing Join/Prune messages. Thanks to Sri V mailto:vallepal@yahoo.com

Version 2.1.0-alpha29.5: February 22, 2001

Changes & New Features

- `VIFM_FORWARDER()` macro renamed to `VIFM_LASTHOP_ROUTER`.
- Mini-FAQ entries added to README.

Bug Fixes

- When there is a new member, `add_leaf()` is called by IGMP code for any router, not only for a DR. The reason is because not only the DR must know about local members, but the last-hop router as well (so eventually it will initiate a SPT switch). Similar fixes to `add_leaf()` inside route.c as well. Problem reported by Hitoshi Asaeda mailto:asaeda@yamato.ibm.com. XXX: Note the lenghty comment in the beginning of `add_leaf()` about a pimd desing problem that may result in SPT switch not initiated immediately by the last-hop router.
- DR entry timer bug fix in timer.c: When (*,G)'s iif and (S,G)'s iif are not same, (S,G)'s timer for the DR doesn't increase. Reported indirectly by mailto:toshiaki.nakatsu@fujixerox.co.jp

Version 2.1.0-alpha29.4: December 1, 2000

Changes & New Features

- README cleanup + Mini-FAQ added
- `igmp_proto.c`: printf argument cleanup (courtesy KAME)
- `main.c:restart()`: forgotten printf argument added (courtesy KAME)

Bug Fixes

- `kern.c:k_stop_pim()`: Fix the ordering of `MRT_PIM` and `MRT_DONE`, thanks to Hitoshi Asaeda mailto:asaeda@yamato.ibm.co.jp.
- `route.c:add_leaf()`: mrtentry creation logic bug fix. If the router is not a DR, a mrtentry is never created. Tanks to Hitoshi Asaeda mailto:asaeda@yamato.ibm.co.jp & (indirectly) mailto:toshiaki.nakatsu@fujixerox.co.jp
- `pim_proto.c`: Two critical bug fixes. J/P prune suppression related message and J/P message with (*,*,RP) entry inside. Thanks to Azzurra Pantella mailto:s198804@studenti.ing.unipi.it and Nicola Dicosmo from University of Pisa
- `pim_proto.c:receive_pim_bootstrap()`: BSR-related fix from Kame's pim6sd. Even when the BSR changes, just schedule an immediate advertisemnet of C-RP-ADV, instead of sending message, in order to avoid sending the advertisement to the old BSR. In response to comment from mailto:toshiaki.nakatsu@fujixerox.co.jp

Version 2.1.0-alpha29.3: October 13, 2000

Bug Fixes

- `ADVANCE()` bug fix in routesock.c (if your system doesn't have `SA_LEN`) thanks to Eric S. Johnson mailto:esj@cs.fiu.edu

Version 2.1.0-alpha29.2: October 13, 2000

NB: THIS pimd VERSION WON'T WORK WITH OLDER PIM-SM KERNEL PATCHES (kernel patches released prior to this version)!

Changes & New Features

- The daemon that the kernel will prepare completely the inner multicast packet for PIM register messages that the kernel is supposed to encapsulate and send to the RP.
- Now pimd compiles on OpenBSD-2.7. PIM control messages exchange test passed. Ddon't have the infrastructure to perform more complete testing.
- `main.c:cleanup()`: Send `PIM_HELLO` with holdtime of '0' if pimd is going away, thanks to JINMEI Tatuya mailto:jinmei@isl.rdc.toshiba.co.jp
- `include/netinet/pim.h` updated
- pimd code adapted to the new `struct pim` definition.
- Added `PIM_OLD_KERNEL` and `BROKEN_CISCO_CHECKSUM` entries in the Makefile.
- Don't ignore kernel signals if any of src or dst are NULL.
- Don't touch `ip_id` on a PIM register message
- README cleanup: kernel patches location, obsoleted systems clarification, etc.
- `k_stop_pim()` added to `cleanup()` in `main.c` (courtesy Kame)

Bug Fixes

- `RANDOM()`-related bug fix re. `jp_value` calculation in `pim_proto.c`, thanks to JINMEI Tatuya mailto:jinmei@isl.rdc.toshiba.co.jp
- `realloc()` related memory leak bug in `config_vifs_from_kernel()` in config.c courtesy Kame's pim6sd code.
- Solaris-8 fixes thanks to Eric S. Johnson mailto:esj@cs.fiu.edu
- `BROKEN_CISCO_CHECKSUM` bug fix thanks to Eric S. Johnson mailto:esj@cs.fiu.edu and Hitoshi Asaeda.
- `main.c`: 1000000 usec -> 1 sec 0 usec. Fix courtesy of the Kame project
- `main.c:restart()` fixup courtesy of the Kame project
- various min. message length check for the received control messages courtesy of the Kame project. XXX: the pimd check is not enough!
- VIF name string comparison fix in `routesock.c:getmsg()` courtesy of the Kame project

- missing brackets added inside `age_routes()` (a bug that will show up only if `KERNEL_MFC_WC_G` was defined); courtesy of the Kame project

Version 2.1.0-alpha28: March 15, 2000

Changes & New Features

- added #ifdef `BROKEN_CISCO_CHECKSUM` (disabled by default) to make cisco RPs happy (read the comments in pim.c)

- added #ifdef `PIM_TYPEVERS_DECL` in netinet/pim.h as a workaround that ANSI-C doesn't guarantee that bit-fields are tightly packed together (although all modern C compilers should not create a problem).

Bug Fixes

- Fixes to enable point-to-point interfaces being added correctly, thanks to Roger Venning mailto:Roger.Venning@corpmail.telstra.com.au

- A number of minor bug fixes

Version 2.1.0-alpha27: January 21, 2000

NB: this release may the the last one from 2.1.0. The next release will be 2.2.0 and there will be lots of changes inside.

Bug Fixes

- Bug fix in `rp.c:add_grp_mask()` and `rp.c:delete_grp_mask()`: in some cases if the RPs are configured with nested multicast prefixes, the add/delete may fail. Thanks to Hitoshi Asaeda and the KAME team for pointing out this one.

Version 2.1.0-alpha26: October 28, 1999

Bug Fixes

- Bug fix in `receive_pim_register()` in `pim_proto.c:ntohl()` was missing inside `IN_MULTICAST()`. Thanks to Fred Griffoul mailto:griffoul@ccrle.nec.de

- Bug report and fix by Hitoshi Asaeda mailto:asaeda@yamato.ibm.co.jp in `pim_proto.c:receive_pim_cand_rp_` (if a router is not a BSR). Another bug in `rp.c:delete_grp_mask_entry()`: an entry not in the head of the list was not deleted properly.

- Some `VIFF_TUNNEL` checks added or deleted in various places. Slowly preparing pimd to be able to work with GRE tunnels. . .

Version 2.1.0-alpha25: August 30, 1999

Bug reports and fixes by Hitoshi Asaeda <mailto:asaeda@yamato.ibm.co.jp> inside `parse_reg_threshold()` and `parse_data_threshold()` in config.c

Changes & New Features

- Successfully added multicast prefixes configured in pimd.conf are displayed at startup

- Use `include/freebsd` as FreeBSD-3.x include files and `include/freebsd2` for FreeBSD-2.x.

Bug Fixes

- Test is performed whether a `PIM_REGISTER` has invalid source and/or group address of the internal packet.

Version 2.1.0-alpha24: August 9, 1999

Changes & New Features

- `PIM_DEFAULT_CAND_RP_ADV_PERIOD` definition set to 60, but default 'time' value for inter Cand-RP messages is set in pimd.conf to 30 sec.

- `PIM_REGISTER` checksum verification in `receive_pim_register()` relaxed for compatibility with some older routers. The checksum has to be computed only over the first 8 bytes of the PIM Register (i.e. only over the header), but some older routers might compute it over the whole packet. Hence, the checksum verification is over the first 8 bytes first, and if if it fails, then over the whole packet. Thus, pimd that is RP should still work with older routers that act as DR, but if an older router is the RP, then pimd cannot be the DR. Sorry, don't know which particular routers and models create the checksum over the whole PIM Register (if there are still any left).

Version 2.1.0-alpha23: May 24, 1999

Changes & New Features

- Finally pimd works under Linux (probably 2.1.126, 2.2.x and 2.3.x). However, a small fix in the kernel `linux/net/ipv4/ipmr.c` is necessary. In function `pim_rcv()`, remove the call to `ip_compute_csum()`:

```
--- linux/net/ipv4/ipmr.c.org   Thu Mar 25 09:23:34 1999
+++ linux/net/ipv4/ipmr.c       Mon May 24 15:42:45 1999
@@ -1342,8 +1342,7 @@
 if (len < sizeof(*pim) + sizeof(*encap) ||
    pim->type != ((PIM_VERSION<<4)|(PIM_REGISTER)) ||
    (pim->flags&PIM_NULL_REGISTER) ||
-           reg_dev == NULL ||
-           ip_compute_csum((void *)pim, len)) {
+           reg_dev == NULL) {
```

```
kfree_skb(skb);
 return -EINVAL;
 }
```

- in pimd.conf "phyint" can be specified not only by IP address, but by name too (e.g. "phyint de1 disable")

- in pimd.conf 'preference' and 'metric' can be specified per "phyint" Note that these 'preference' and 'metric' are like per iif.

- `MRT_PIM` used (again) instead of `MRT_ASSERT` in kern.c. The problem is that Linux has both `MRT_ASSERT` and `MRT_PIM`, while *BSD has only `MRT_ASSERT`.

```
#ifndef MRT_PIM
#define MRT_PIM MRT_ASSERT
#endif
```

- Rely on `__bsdi__`, which is defined by the OS, instead of -DBSDI in Makefile, change by Hitoshi Asaeda. Similarly, use `__FreeBSD__` instead of -DFreeBSD

- Linux patches by Fred Griffoul mailto:griffoul@ccrle.nec.de including a `netlink.c` instead of `routesock.c`

- `vif.c:zero_vif()`: New function

Bug Fixes

All bug reports thanks to Kaifu Wu mailto:kaifu@3com.com

- Linux-related bug fixes regarding raw IP packets byte ordering

- Join/Prune message bug fixed if the message contains several groups joined/pruned

Version 2.1.0-alpha22: November 11, 1998

Bug reports by Jonathan Day mailto:jd9812@my-dejanews.com

Bug Fixes

- Bug fixes to compile under newer Linux kernel (linux-2.1.127) To compile for older kernels (ver < ???), add `-Dold_Linux` to the Makefile

- For convenience, the `include/linux/netinet/{in.h,mroute.h}` files are added, with few modifications applied.

Version 2.1.0-alpha21: November 4, 1998

Bug Fixes

- `pim_proto.c:join_or_prune()`: Bug fixes in case of (S,G) overlapping with (*,G). Bug report by Dirk Ooms mailto:Dirk.Ooms@alcatel.be

- `route.c:change_interfaces()`: Join/Prune (*,G), (*,*,RP) fire timer optimization/fix.

Version 2.1.0-alpha20: August 26, 1998

Changes & New Features

- (Almost) all timers manipulation now use macros

- `pim.h` and `pim_var.h` are in separate common directory

- Added BSDI definition to `pim_var.h`, thanks to Hitoshi Asaeda.

Bug Fixes

- fix TIMEOUT definitions in difs.h (bug report by Nidhi Bhaskar) (originally, if timer value less than 5 seconds, it won't become 0) It is HIGHLY recommended to apply that fix, so here it is:

```
-------------BEGIN BUG FIX------------------
  1) Add the following lines to defs.h (after #define FALSE):

#ifndef MAX
#define MAX(a,b) (((a) >= (b))? (a) : (b))
#define MIN(a,b) (((a) <= (b))? (a) : (b))
#endif /* MAX & MIN */

  2) Change the listed below TIMEOUT macros to:

#define IF_TIMEOUT(timer)               \
if (!((timer) -= (MIN(timer, TIMER_INTERVAL))))

#define IF_NOT_TIMEOUT(timer)           \
if ((timer) -= (MIN(timer, TIMER_INTERVAL)))

#define TIMEOUT(timer)                  \
(!((timer) -= (MIN(timer, TIMER_INTERVAL))))

#define NOT_TIMEOUT(timer)              \
((timer) -= (MIN(timer, TIMER_INTERVAL)))
--------------END BUG FIX-------
```

Version 2.1.0-alpha19: July 29, 1998

Both bug reports by Chirayu Shah mailto:shahzad@torrentnet.com-

Bug Fixes

- bug fix in `find_route()` when searching for (*,*,RP)

- bug fix in `move_kernel_cache()`: no need to do `move_kernel_cache()` from (*,*,R) to (*,G) first when we call `move_kernel_cache()` for (S,G)

Version 2.1.0-alpha18: May 29, 1998

Changes & New Features

- Now compiles under Linux (haven't checked whether the PIMv2 kernel support in linux-2.1.103 works)

Bug Fixes

- `parse_default_source*()` bug fix (bug reports by Nidhi Bhaskar)
- allpimrouters deleted from igmp.c (already defined in pim.c)
- igmpmsg defined for IRIX

Version 2.1.0-alpha17: May 21, 1998

Changes & New Features

- (*,G) MFC kernel support completed and verified. Compile with `KERNEL_MFC_WC_G` defined in Makefile, but then must use it only with a kernel that supports (*,G), e.g. `pimkern-PATCH_7`. Currently, kernel patches available for FreeBSD and SunOS only.

Bug Fixes

- `MRTF_MFC_CLONE_SG` flag set after `delete_single_kernel_cache()` is called

Version 2.1.0-alpha16: May 19, 1998

Changes & New Features

- PIM registers kernel encapsulation support. Build with `PIM_REG_KERNEL_ENCAP` defined in Makefile.
- (*,G) MFC support. Build with `KERNEL_MFC_WC_G` defined in Makefile. However, `MFC_WC_G` is still not supported with `pimkern-PATCH_6`, must disable it for now.
- `mrt.c:delete_single_kernel_cache_addr()`: New function, uses source, group to specify an MFC to be deleted

Version 2.1.0-alpha15: May 14, 1998

- Another few bug fixes related to NetBSD definitions thanks to Heiko W.Rupp [mailto: hwr@pilhuhn.de](mailto:hwr@pilhuhn.de)

Version 2.1.0-alpha14: May 12, 1998

- A few bug fixes related to NetBSD definitions thanks to Heiko W.Rupp mailto:hwr@pilhuhn.de

Version 2.1.0-alpha13: May 11, 1998

Changes & New Features

- If the RP changes, the necessary actions are taken to pass the new RP address to the kernel. To be used for kernel register encap. support. Wnat needs to be done is: (a) add `rp_addr` entry to the mfcctl structure, and then just set it in `kern.c:k_chf_mfc()`. Obviously, the kernel needs to support the register encapsulation (instead of sending WHOLEPKT to the user level). In the near few days will make the necessary kernel changes.
- `change_interfaces()`: Added "flags" argument. The only valid flag is `MFC_UPDATE_FORCE`, used for forcing kernel call when only the RP changes.
- `k_chg_mfc()` has a new argument: rp_{addr}. To be used for kernel register encapsulation support
- `MRT_PIM` completely replaced by `MRT_ASSERT`
- `move_kernel_cache()`: Argument `MFC_MOVE_FORCE` is a flag instead of TRUE/FALSE
- `process_cache_miss()`: removed unneeded piece of code

Version 2.1.0-alpha12: May 10, 1998

Changes & New Features

- Use the cleaned up `netinet/pim.h`
- Remove the no needed anymore pim header definition in `pimd.h`
- Don't use `MRT_PIM` in in kern.c anymore, replaced back with `MRT_ASSERT`.
- added `default_source_metric` and `default_source_preference` (1024) because the kernel's unicast routing table is not a good source of info; configurable in pimd.conf
- Can now compile under NetBSD-1.3, thanks to Heiko W.Rupp mailto:hwr@pilhuhn.de

Bug Fixes

- Incorrect setup of the borderBit and nullRegisterBit (different for big and little endian machines) fixed; `*_BORDER_BIT` and `*NULL_REGISTER_BIT` redefined
- don't send `pim_assert` on tunnels or register vifs (if for whatever reason we receive on such interface)
- ignore `WRONGVIF` messages for register and tunnel vifs (the cleaned up kernel mods dont send such signal, but the older (before May 9 '98) pimd mods that signaling was enabled

Version 2.1.0-alpha11: March 16, 1998

Changes & New Features

- `vif.c:find_vif_direct_local()`: New function, used in `routesock.c`, `igmp_proto.c`
- Use `MFC_MOVE_FORCE/MFC_MOVE_DONT_FORCE` flag in `mrt.c`, `route.c`, `pim_proto.c`, when need to move the kernel cache entries between (*,*,RP), (*,G), (S,G)
- new timer related macros: `SET_TIMER()`, `FIRE_TIMER()`, `IF_TIMER_SET()`, `IF_TIMER_NOT_SET()`

Bug Fixes

- `timer.c:age_routes()`: bunch of fixes regarding J/P message fragmentation
- `route.c:process_wrong_iif()`: (S,G) SPT switch bug fix: ANDed `MRTF_RP` fixed to `MRTF_RP`
- `pim_proto.c` & `timer.c`: (S,G) Prune now is sent toward RP, when iif toward S and iif toward RP are different
- `pim_proto.c:join_or_prune()` bug fixes
- `pim_proto.c`: (S,G)Prune entry's timer now set to J/P message holdtime
- `pim_proto.c:receive_pim_join_prune()`: Ensure pruned interfaces are correctly reestablished
- `timer.c:age_routes()`: now (S,G) entry with local members (inherited from (*,G)) is timeout propertly
- `timer.c:age_routes()`: (S,G) J/P timer restarted propertly
- `timer.c:age_routes()`: check also the (S,G)RPbit entries in the forwarders and RP and eventually switch to the shortest path if data rate too high
- `route.c:process_wrong_vif()` fire J/P timer
- `route.c:switch_shortest_path()`: reset the iif toward S if there is already (S,G)RPbit entry

Version 2.1.0-alpha10: March 3, 1998

Temp. non-public release.

Changes & New Features

- 'interval' can be applied for data rate check. The statement in `pimd.conf` that only the default value will be used is not true anymore.
- The RP-initiated and the forwarder-initiated (S,G) switch threshold rate can be different.
- `pim_proto.c:receive_pim_register()`: check if I am the RP for that group, and if "no", send `PIM_REGISTER_STOP` (XXX: not in the spec, but should be!)

- `pim_proto.c:receive_pim_register_stop()`: check if the `PIM_REGISTER_STOP` originator is really the RP, before suppressing the sending of the PIM registers. (XXX: not in the spec but should be there)

- `rp.c:check_mrtentry_rp()`: new function added to check whether the RP address is the corresponding one for the given mrtentry

- `debug.c:dump_mrt()` timer values added

- `route.c`: `add_leaf()`, `process_cache_miss()`, `process_wrong_iif()` no routing entries created for the LAN scoped addresses

- `DEBUG_DVMRP_DETAIL` and `DEBUG_PIM_DETAIL` added

Bug Fixes

- `mrt.c:add_kernel_cache()`: no kernel cache duplicates

- `mrt.c:move_kernel_cache()`: if the iif of the (*,*,R) (or (*,G)) and (S,G) are different, dont move the cache entry "UP"

- `timer.c:age_routes()`: (S,G) `add_jp_entry()` flag fixed, SPT switch related.

- `kern.c:k_get_sg_cnt()`: modified to compensate for the kernel's return code bug for getting (S,G) byte count (`SIOCGETSGCNT`)

- `pim_proto.c:receive_pim_register()`: if the (S,G) oif is NULL, now checks whether the iif is `register_vif`

Version 2.1.0-alpha9: February 18, 1997

Changes & New Features

- "non-commersial" statement deleted from the copyright message

- mrinfo support added

- mtrace support added (not completed and not enough tested)

- if invalid local address for `cand_rp` or `cand_bootstrap_router` in `pimd.conf`, automatically will use the largest local multicast enabled address

- "include" directory for FreeBSD and SunOS added, so now pimd can be compiled without having the necesary "include" files added to your system. Probably a bad idea and may remove it later.

- some default values for the IP headers of the IGMP and PIM packets are fixed

- `VIFF_PIM_NBR` and `VIFF_DVMRP_NBR` flags added

- `VIFF_REGISTER` now included in the RSRR vifs report

- `find_route()` debug messages removed

- #ifdef for `HAVE_SA_LEN` corrected

- `debug.c`: small fixes

Version 2.1.0-alpha8: November 23, 1997

Bug Fixes

- BSDI related bug fix in defs.h
- small changes in Makefile

Version 2.1.0-alpha7: November 23, 1997

Changes & New Features

- RSRR support for (*,G) completed
- BSDI 3.0/3.1 support by Hitoshi Asaeda mailto:asaeda@yamato.ibm.co.jp (the kernel patches will be available soon)
- Improved debug messages format (thanks to Hitoshi Asaeda)
- A new function `netname()` for network IP address print instead of `inet_fmts()`, thanks to Hitoshi Asaeda.
- `pimd.conf`: format changed

Version 2.1.0-alpha6: November 20, 1997

Bug Fixes

- Remove the inherited leaves from (S,G) when a receiver drops membership
- some parameters when calling `change_interface()` fixed
- use `send_pim_null_register` + take the appropriate action when the register suppression timer expires
- bug fix related to choosing the largest local IP address for little endian machines.

Version 2.1.0-alpha5

Bug Fixes

- `main.c:main()`: startup message fix
- `timer.c:age_routes()`: bug fix in debug code

Version 2.1.0-alpha4: October 31, 1997

Changes & New Features

- Minor changes, so pimd now compiles for SunOS 4.1.3 (cc, gcc)

Bug Fixes

- `pim_proto.csend_periodic_pim_join_prune()`: bug fix thanks to SunOS cc warning(!), only affects the (*,*,RP) stuff.
- `pimd.conf`: two errors, related to the rate limit fixed

Version 2.1.0-alpha3: October 13, 1997

Changes & New Features

- `Makefile`: cleanup
- `defs.h`: cleanup
- `routesock.c`: cleanup

Bug Fixes

- `igmp_proto.c:accept_group_report()`: bug fixes
- `pim_proto.c:receive_pim_hello()`: bug fixes
- `route.c:change_interfaces()`: bug fixes
- `rp.c`: bug fixes in `init_rp_and_bsr()`, `add_cand_rp()`, and `create_pim_bootstrap_message()`

Version 2.1.0-alpha2: September 23, 1997

Changes & New Features

- `Makefile`: "make diff" code added
- `debug.c`: debug output slightly changed

Bug Fixes

- `defs.h:*TIMEOUT()`: definitions fixed
- `route.c`: bugs fixed in `change_interface()` and `switch_shortest_path()`
- `timer.c:age_routes()`: number of bugs fixed

Version 2.1.0-alpha1: August 26, 1997

Changes & New Features

First alpha version of the "new, up to date" pimd. RSRR support + Solaris support added. Many functions rewritten and/or modified.