batman-adv - Bug #322
compiling for 4.5 fails: "implicit declaration of function 'G_TC_AT'"
12/24/2016 08:32 AM - Linus Lüssing

| Status: | Closed |
| Priority: | Normal |
| Assignee: | Linus Lüssing |
| Target version: | 2017.0 |
| Start date: | 12/24/2016 |
| Due date: | |
| % Done: | 0% |
| Estimated time: | 0.00 hour |

Description
I suspect it might even be the compat code I provided with the last multicast patchset, but couldn't quite verify yet. The issue is the following, occurring when trying to build against a 4.5.0 kernel with a kernel config build via "make defconfig":

```
/home/tux/dev/batman-adv-t_x/gen-compat-autoconf.sh /home/tux/dev/batman-adv-t_x/compat-autoconf.sh
mkdir -p /home/tux/dev/batman-adv-t_x/build/net/batman-adv/
compat-patches/replacements.sh
/usr/bin/make -C /home/tux/dev/linux/headers/usr/src/linux-headers-4.5.0+ M=/home/tux/dev/batman-adv-t_x/build net.headers=2016.3 CONFIG_BATMAN_ADV=DEFCONFIG widrive=1 CONFIG_BATMAN_ADV_DEBUG=y CONFIG_BATMAN_ADV_DEBUGFS=y CONFIG_BATMAN_ADV_BLA=y CONFIG_BATMAN_ADV_MCAST=y CONFIG_BATMAN_ADV_BATMAN_V=y INSTALL_MOD_DIR=updates/modules
make[1]: Entering directory '/home/tux/dev/linux/headers/usr/src/linux-headers-4.5.0+'
  CC [M] /home/tux/dev/batman-adv-t_x/build/net/batman-adv/../compat-sources/net/core/skbuff.o
In file included from include/linux/filter.h:16:0,
  from include/net/sock.h:64,
  from include/linux/tcp.h:22,
  from include/linux/ipv6.h:72,
  from /home/tux/dev/batman-adv-t_x/build/net/batman-adv/../compat-sources/net/core/skbuff.c:35:
#include/net/sch_generic.h: In function ‘skb_at_tc_ingress’:
#include/net/sch_generic.h:413:2: error: implicit declaration of function ‘G_TC_AT’ [W-error=implicit-function-declaration]
  return G_TC_AT(skb->tc_verd) & AT_INGRESS;
  ^
#include/net/sch_generic.h:413:33: error: ‘AT_INGRESS’ undeclared (first use in this function)
  return G_TC_AT(skb->tc_verd) & AT_INGRESS;
  ^
#include/net/sch_generic.h:413:33: note: each undeclared identifier is reported only once for each function it appears in
cc1: all warnings being treated as errors
scripts/Makefile.build:258: recipe for target './home/tux/dev/batman-adv-t_x/build/net/batman-adv/.../compat-sources/net/core/skbuff.o' failed
make[3]: *** [./home/tux/dev/batman-adv-t_x/build/net/batman-adv/.../compat-sources/net/core/skbuff.o] Error 1
scripts/Makefile.build:407: recipe for target './home/tux/dev/batman-adv-t_x/build/net/batman-adv' failed
make[2]: *** [./home/tux/dev/batman-adv-t_x/build/net/batman-adv] Error 2
Makefile:1391: recipe for target '_module_/home/tux/dev/batman-adv-t_x/build' failed
make[1]: *** [._module_/home/tux/dev/batman-adv-t_x/build] Error 2
make[1]: Leaving directory '/home/tux/dev/linux/headers/usr/src/linux-headers-4.5.0+'
Makefile:90: recipe for target 'all' failed
make: *** [all] Error 2
```

I can reproduce the error with v2016.3, v2016.4, v2016.5 and master. The issue does not occur with a kernel 4.6 to 4.9 - those versions have a CONFIG_NET_CLS_ACT set in their .config, too, and the includes of net/pkt_cls.h, uapi/linux/pkt_cls.h or net/sch_generic.h look the same to me compared to 4.5.0.

02/22/2020
Although the includes do indeed look a little strange, I'm currently wondering why "include/net/pkt_cls.h" is not "include/linux/pkt_cls.h" which would match better to the uapi variant, I guess?

I will try to reproduce the issue with a v4.5.7 kernel.

**Update:**

- 4.5.7 does not work either
- 4.3.0 and 4.4.0 work fine

**History**

#1 - 12/24/2016 09:14 AM - Linus Lüssing
- Description updated

#2 - 12/24/2016 09:30 AM - Sven Eckelmann
- Assignee set to Linus Lüssing

Have you checked what Virtualbox did to fix it in their SVN repo? [https://www.virtualbox.org/ticket/15327](https://www.virtualbox.org/ticket/15327)

#3 - 12/24/2016 01:49 PM - Linus Lüssing

Woops, haven't saved my last update. My last update consisted this, so yes, a search engine also led me to VirtualBox having had the same issue once.

What they did is simply adding an include in their VirtualBox code, compat style. But looks kind of "wrong", I'm wondering why they haven't submitted a patch to Linux for an include in net/sch_generic.h.

I'm currently bisect'ing, it's some commit between Linux 4.4rc-7 and 4.4-rc8 having introduced the issue.

Also, it's not multicast dependent, with multicast optimizations disabled it fails for bridge-loop-avoidance.c instead.

#4 - 12/24/2016 04:03 PM - Linus Lüssing

This commit introduced the issue:

```diff
diff --git a/include/net/sch_sched.h b/include/net/sch_sched.h
--- a/include/net/sch_sched.h
+++ b/include/net/sch_sched.h
@@ -2163,6 +2163,7 @@ struct sk_buff{ struct skb_cl谛ェe {   skb_cl谛ェee *skb_cl谛ェee; 
   skb_cl谛ェee *skb_cl谛ェee; 
   skb_cl谛ェee *skb_cl谛ェee; 
+  struct skb_cl谛ェee {     skb_cl谛ェee *skb_cl谛ェee; 
```

Seems obvious to me that the author moved code but forgot to move/add an include, too.

I will continue bisect'ing tomorrow to figure out what might have fixed or hidden this bug again between 4.5 and 4.6. (Maybe that points to some fix which was simply forgotten to be backported to 4.5 stable kernels)

02/22/2020
And this is the patch which accidentally “fixed” it by adding the missing include for uapi/linux/pkt_cls.h in include/linux/netdevice.h:

```
commit e4c6734eaab90695db0ea8456307790cb0c1ccb5
Author: John Fastabend <john.fastabend@gmail.com>
Date: Tue Feb 16 21:16:15 2016 -0800

net: rework ndo tc op to consume additional qdisc handle parameter

The ndo_setup_tc() op was added to support drivers offloading tx qdiscs however only support for mpqrio was ever added. So we only ever added support for passing the number of traffic classes to the driver.

This patch generalizes the ndo_setup_tc op so that a handle can be provided to indicate if the offload is for ingress or egress or potentially even child qdiscs.

CC: Murali Karicheri <m-karicheri2@ti.com>
CC: Shradha Shah <sshah@solarflare.com>
CC: Or Gerlitz <ogerlitz@mellanox.com>
CC: Ariel Elior <ariel.elior@qlogic.com>
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CC: Bruce Allan <bruce.w.allan@intel.com>
CC: Jesse Brandenburg <jesse.brandenburg@intel.com>
CC: Don Skidmore <donald.c.skidmore@intel.com>
Signed-off-by: John Fastabend <john.r.fastabend@intel.com>
Acked-by: Jiri Pirko <jiri@mellanox.com>
Acked-by: Jamal Hadi Salim <jhs@mojatatu.com>
Signed-off-by: David S. Miller <davem@davemloft.net>
```

I’ll prepare two patches: One reverting the include this commit made with an “Introduced-by:” to this commit. And then a second patch which re-adds the include in include/net/sch_generic.h with an “Introduced-by:” to the helper patch mentioned yesterday which introduced the issue in the first place.

So the first patch will hopefully go to 4.6 kernels and newer, the second one to 4.5 kernels and newer.
The simple patch to add the missing include for uapi/linux/pkt_cls.h in net/sch_generic.h did not work.

I'm currently trying to investigate with Daniel Borkmann why the linux-headers directory created via "$ make-kpkg kernel_headers" creates two and differing header files with the same __LINUX_PKT_CLS_H guard:

- uapi/linux/pkt_cls.h
- linux/pkt_cls.h - has the "#ifdef KERNEL" section containing the necessary define stripped

So if the non-uapi version is included before the uapi one, then compilation fails.

(So far I am a little clueless why those two headers with the same guard exist or how to fix that)

Since there was no response from upstream to fix things in Debian's make-kpkg, a workaround was added to the batman-adv compat code, present since batman-adv 2017.0:

"batman-adv: compat: workaround for issues with make-kpkg for 4.5 kernels" (102146d65c5)

However, make-kpkg still needs to be fixed.

(and actually a new, probably related problem just popped up: #333)

- Target version set to 2017.0
- Status changed from New to Closed