
Subject: [patch 30/38][IPv6] route6 - make route6 per namespace

Posted by [Daniel Lezcano](#) on Mon, 03 Dec 2007 16:17:06 GMT

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This patch makes the routing engine use the network namespaces to access routing informations:

Add a network namespace parameter to `ipv6_route_ioctl` and propagate the network namespace value to all the routing code that have not yet been changed.

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```
include/net/ip6_route.h | 4 ++
net/ipv6/addrconf.c     | 9 ++++++
net/ipv6/af_inet6.c     | 3 +-
net/ipv6/route.c        | 68 ++++++++++++++++++++++++++++++++++++++-----
4 files changed, 49 insertions(+), 35 deletions(-)
```

Index: linux-2.6-netns/include/net/ip6_route.h

=====

--- linux-2.6-netns.orig/include/net/ip6_route.h

+++ linux-2.6-netns/include/net/ip6_route.h

@@ -53,7 +53,9 @@ extern struct dst_entry * ip6_route_outp

extern void ip6_route_init(void);

extern void ip6_route_cleanup(void);

-extern int ipv6_route_ioctl(unsigned int cmd, void __user *arg);

+extern int ipv6_route_ioctl(struct net *net,

+ unsigned int cmd,

+ void __user *arg);

extern int ip6_route_add(struct fib6_config *cfg);

extern int ip6_ins_rt(struct rt6_info *);

Index: linux-2.6-netns/net/ipv6/addrconf.c

=====

--- linux-2.6-netns.orig/net/ipv6/addrconf.c

+++ linux-2.6-netns/net/ipv6/addrconf.c

@@ -1530,6 +1530,9 @@ addrconf_prefix_route(struct in6_addr *p

.fc_expires = expires,

.fc_dst_len = plen,

.fc_flags = RTF_UP | flags,

+ .fc_nlnfo.pid = 0,

+ .fc_nlnfo.nlh = NULL,

+ .fc_nlnfo.net = &init_net,

};

ipv6_addr_copy(&cfg.fc_dst, pfx);

```

@@ -1556,6 +1559,9 @@ static void addrconf_add_mroute(struct n
    .fc_ifindex = dev->ifindex,
    .fc_dst_len = 8,
    .fc_flags = RTF_UP,
+ .fc_nlninfo.pid = 0,
+ .fc_nlninfo.nlh = NULL,
+ .fc_nlninfo.net = &init_net,
};

```

```

    ipv6_addr_set(&cfg.fc_dst, htonl(0xFF000000), 0, 0, 0);
@@ -1572,6 +1578,9 @@ static void sit_route_add(struct net_dev
    .fc_ifindex = dev->ifindex,
    .fc_dst_len = 96,
    .fc_flags = RTF_UP | RTF_NONEXTHOP,
+ .fc_nlninfo.pid = 0,
+ .fc_nlninfo.nlh = NULL,
+ .fc_nlninfo.net = &init_net,
};

```

```

/* prefix length - 96 bits "::d.d.d.d" */
Index: linux-2.6-netns/net/ipv6/af_inet6.c

```

```

=====
--- linux-2.6-netns.orig/net/ipv6/af_inet6.c
+++ linux-2.6-netns/net/ipv6/af_inet6.c
@@ -441,6 +441,7 @@ EXPORT_SYMBOL(inet6_getname);
int inet6_ioctl(struct socket *sock, unsigned int cmd, unsigned long arg)
{
    struct sock *sk = sock->sk;
+ struct net *net = sk->sk_net;

```

```

    switch(cmd)
    {
@@ -453,7 +454,7 @@ int inet6_ioctl(struct socket *sock, uns
    case SIOCADDRT:
    case SIOCDELRT:

```

```

- return(ipv6_route_ioctl(cmd,(void __user *)arg));
+ return(ipv6_route_ioctl(net, cmd,(void __user *)arg));

```

```

    case SIOCSIFADDR:
        return addrconf_add_ifaddr((void __user *) arg);

```

```

Index: linux-2.6-netns/net/ipv6/route.c

```

```

=====
--- linux-2.6-netns.orig/net/ipv6/route.c
+++ linux-2.6-netns/net/ipv6/route.c
@@ -610,10 +610,11 @@ static int __ip6_ins_rt(struct rt6_info

int ip6_ins_rt(struct rt6_info *rt)

```

```

{
+ struct net *net = rt->rt6i_dev->nd_net;
  struct nl_info info = {
    .nlh = NULL,
    .pid = 0,
-   .net = &init_net,
+   .net = net,
  };
  return __ip6_ins_rt(rt, &info);
}
@@ -752,7 +753,7 @@ void ip6_route_input(struct sk_buff *skb
  struct ipv6hdr *iph = ipv6_hdr(skb);
  int flags = RT6_LOOKUP_F_HAS_SADDR;
  struct flowi fl = {
-   .fl_net = &init_net,
+   .fl_net = skb->dev->nd_net,
    .iif = skb->dev->ifindex,
    .nl_u = {
      .ip6_u = {
@@ -1055,6 +1056,7 @@ int ipv6_get_hoplimit(struct net_device
int ip6_route_add(struct fib6_config *cfg)
{
  int err;
+ struct net *net = cfg->fc_nlinfo.net;
  struct rt6_info *rt = NULL;
  struct net_device *dev = NULL;
  struct inet6_dev *idev = NULL;
@@ -1069,7 +1071,7 @@ int ip6_route_add(struct fib6_config *cf
#endif
  if (cfg->fc_ifindex) {
    err = -ENODEV;
-   dev = dev_get_by_index(&init_net, cfg->fc_ifindex);
+   dev = dev_get_by_index(net, cfg->fc_ifindex);
    if (!dev)
      goto out;
    idev = in6_dev_get(dev);
@@ -1080,7 +1082,7 @@ int ip6_route_add(struct fib6_config *cf
  if (cfg->fc_metric == 0)
    cfg->fc_metric = IP6_RT_PRIO_USER;

- table = fib6_new_table(&init_net, cfg->fc_table);
+ table = fib6_new_table(net, cfg->fc_table);
  if (table == NULL) {
    err = -ENOBUFS;
    goto out;
@@ -1127,12 +1129,12 @@ int ip6_route_add(struct fib6_config *cf
  if ((cfg->fc_flags & RTF_REJECT) ||
      (dev && (dev->flags & IFF_LOOPBACK) && !(addr_type & IPV6_ADDR_LOOPBACK))) {

```

```

/* hold loopback dev/idev if we haven't done so. */
- if (dev != init_net.loopback_dev) {
+ if (dev != net->loopback_dev) {
    if (dev) {
        dev_put(dev);
        in6_dev_put(idev);
    }
- dev = init_net.loopback_dev;
+ dev = net->loopback_dev;
    dev_hold(dev);
    idev = in6_dev_get(dev);
    if (!idev) {
@@ -1169,7 +1171,7 @@ int ip6_route_add(struct fib6_config *cf
    if (!(gwa_type & IPV6_ADDR_UNICAST))
        goto out;

- grt = rt6_lookup(&init_net, gw_addr, NULL, cfg->fc_ifindex, 1);
+ grt = rt6_lookup(net, gw_addr, NULL, cfg->fc_ifindex, 1);

    err = -EHOSTUNREACH;
    if (grt == NULL)
@@ -1273,10 +1275,11 @@ static int __ip6_del_rt(struct rt6_info

int ip6_del_rt(struct rt6_info *rt)
{
+ struct net *net = rt->rt6i_dev->nd_net;
    struct nl_info info = {
        .nlh = NULL,
        .pid = 0,
- .net = &init_net,
+ .net = net,
    };
    return __ip6_del_rt(rt, &info);
}
@@ -1288,7 +1291,7 @@ static int ip6_route_del(struct fib6_con
    struct rt6_info *rt;
    int err = -ESRCH;

- table = fib6_get_table(&init_net, cfg->fc_table);
+ table = fib6_get_table(cfg->fc_nlinfow.net, cfg->fc_table);
    if (table == NULL)
        return err;

@@ -1389,7 +1392,7 @@ static struct rt6_info *ip6_route_redire
    int flags = RT6_LOOKUP_F_HAS_SADDR;
    struct ip6rd_flowi rdfl = {
        .fl = {
- .fl_net = &init_net,

```

```

+ .fl_net = dev->nd_net,
  .oif = dev->ifindex,
  .nl_u = {
    .ip6_u = {
@@ -1663,7 +1666,7 @@ struct rt6_info *rt6_get_dflt_router(str
  struct rt6_info *rt;
  struct fib6_table *table;

- table = fib6_get_table(&init_net, RT6_TABLE_DFLT);
+ table = fib6_get_table(dev->nd_net, RT6_TABLE_DFLT);
  if (table == NULL)
    return NULL;

@@ -1690,6 +1693,9 @@ struct rt6_info *rt6_add_dflt_router(str
  .fc_ifindex = dev->ifindex,
  .fc_flags = RTF_GATEWAY | RTF_ADDRCONF | RTF_DEFAULT |
    RTF_UP | RTF_EXPIRES | RTF_PREF(pref),
+ .fc_nlninfo.pid = 0,
+ .fc_nlninfo.nlh = NULL,
+ .fc_nlninfo.net = dev->nd_net,
  };

  ipv6_addr_copy(&cfg.fc_gateway, gwaddr);
@@ -1722,7 +1728,8 @@ restart:
  read_unlock_bh(&table->tb6_lock);
}

-static void rtmsg_to_fib6_config(struct in6_rtmsg *rtmsg,
+static void rtmsg_to_fib6_config(struct net *net,
+ struct in6_rtmsg *rtmsg,
+ struct fib6_config *cfg)
{
  memset(cfg, 0, sizeof(*cfg));
@@ -1735,12 +1742,16 @@ static void rtmsg_to_fib6_config(struct
  cfg->fc_src_len = rtmsg->rtmsg_src_len;
  cfg->fc_flags = rtmsg->rtmsg_flags;

+ cfg->fc_nlninfo.pid = 0;
+ cfg->fc_nlninfo.nlh = NULL;
+ cfg->fc_nlninfo.net = net;
+
  ipv6_addr_copy(&cfg->fc_dst, &rtmsg->rtmsg_dst);
  ipv6_addr_copy(&cfg->fc_src, &rtmsg->rtmsg_src);
  ipv6_addr_copy(&cfg->fc_gateway, &rtmsg->rtmsg_gateway);
}

-int ipv6_route_ioctl(unsigned int cmd, void __user *arg)
+int ipv6_route_ioctl(struct net *net, unsigned int cmd, void __user *arg)

```

```

{
    struct fib6_config cfg;
    struct in6_rtmmsg rtmmsg;
@@ -1756,7 +1767,7 @@ int ipv6_route_ioctl(unsigned int cmd, v
    if (err)
        return -EFAULT;

- rtmmsg_to_fib6_config(&rtmmsg, &cfg);
+ rtmmsg_to_fib6_config(net, &rtmmsg, &cfg);

    rtnl_lock();
    switch (cmd) {
@@ -1836,18 +1847,19 @@ struct rt6_info *addrconf_dst_alloc(stru
        const struct in6_addr *addr,
        int anycast)
    {
+ struct net *net = idev->dev->nd_net;
    struct rt6_info *rt = ip6_dst_alloc();

    if (rt == NULL)
        return ERR_PTR(-ENOMEM);

- dev_hold(init_net.loopback_dev);
+ dev_hold(net->loopback_dev);
    in6_dev_hold(idev);

    rt->u.dst.flags = DST_HOST;
    rt->u.dst.input = ip6_input;
    rt->u.dst.output = ip6_output;
- rt->rt6i_dev = init_net.loopback_dev;
+ rt->rt6i_dev = net->loopback_dev;
    rt->rt6i_idev = idev;
    rt->u.dst.metrics[RTAX_MTU-1] = ipv6_get_mtu(rt->rt6i_dev);
    rt->u.dst.metrics[RTAX_ADVMSS-1] = ipv6_advmss(dst_mtu(&rt->u.dst));
@@ -1867,7 +1879,7 @@ struct rt6_info *addrconf_dst_alloc(stru

    ipv6_addr_copy(&rt->rt6i_dst.addr, addr);
    rt->rt6i_dst.plen = 128;
- rt->rt6i_table = fib6_get_table(&init_net, RT6_TABLE_LOCAL);
+ rt->rt6i_table = fib6_get_table(net, RT6_TABLE_LOCAL);

    atomic_set(&rt->u.dst.__refcnt, 1);

@@ -2025,13 +2037,9 @@ errout:

static int inet6_rtm_delroute(struct sk_buff *skb, struct nlmsg_hdr* nlh, void *arg)
{
- struct net *net = skb->sk->sk_net;

```

```

struct fib6_config cfg;
int err;

- if (net != &init_net)
- return -EINVAL;
-
err = rtm_to_fib6_config(skb, nlh, &cfg);
if (err < 0)
return err;
@@ -2041,13 +2049,9 @@ static int inet6_rtm_delroute(struct sk_

static int inet6_rtm_newroute(struct sk_buff *skb, struct nlmsg_hdr* nlh, void *arg)
{
- struct net *net = skb->sk->sk_net;
struct fib6_config cfg;
int err;

- if (net != &init_net)
- return -EINVAL;
-
err = rtm_to_fib6_config(skb, nlh, &cfg);
if (err < 0)
return err;
@@ -2190,16 +2194,13 @@ static int inet6_rtm_getroute(struct sk_
struct flowi fl;
int err, iif = 0;

- if (net != &init_net)
- return -EINVAL;
-
err = nlmsg_parse(nlh, sizeof(*rtm), tb, RTA_MAX, rtm_ipv6_policy);
if (err < 0)
goto errout;

err = -EINVAL;
memset(&fl, 0, sizeof(fl));
- fl.fl_net = &init_net;
+ fl.fl_net = net;

if (tb[RTA_SRC]) {
if (nla_len(tb[RTA_SRC]) < sizeof(struct in6_addr))
@@ -2223,7 +2224,7 @@ static int inet6_rtm_getroute(struct sk_

if (iif) {
struct net_device *dev;
- dev = __dev_get_by_index(&init_net, iif);
+ dev = __dev_get_by_index(net, iif);
if (!dev) {

```

```

    err = -ENODEV;
    goto errout;
@@ -2253,7 +2254,7 @@ static int inet6_rtm_getroute(struct sk_
    goto errout;
}

- err = rtnl_unicast(skb, &init_net, NETLINK_CB(in_skb).pid);
+ err = rtnl_unicast(skb, net, NETLINK_CB(in_skb).pid);
errout:
    return err;
}
@@ -2263,6 +2264,7 @@ void inet6_rt_notify(int event, struct r
    struct sk_buff *skb;
    u32 pid = info->pid, seq = info->nlh ? info->nlh->nlmsg_seq : 0;
    struct nlmsg_hdr *nlh = info->nlh;
+ struct net *net = info->net;
    int err = -ENOBUFFS;

    skb = nlmsg_new(rt6_nlmsg_size(), gfp_any());
@@ -2276,10 +2278,10 @@ void inet6_rt_notify(int event, struct r
    kfree_skb(skb);
    goto errout;
}
- err = rtnl_notify(skb, &init_net, pid, RTNLGRP_IPV6_ROUTE, nlh, gfp_any());
+ err = rtnl_notify(skb, net, pid, RTNLGRP_IPV6_ROUTE, nlh, gfp_any());
errout:
    if (err < 0)
-    rtnl_set_sk_err(&init_net, RTNLGRP_IPV6_ROUTE, err);
+    rtnl_set_sk_err(net, RTNLGRP_IPV6_ROUTE, err);
}

/*

--

```

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