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Subject: [PATCH net-2.6.25 0/6][NETNS]: Make ipv6\_devconf (all and default) live in net namespaces

Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 13:55:12 GMT

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The ipv6\_devconf\_(all) and ipv6\_devconf\_dflt are currently global, but should be per-namespace.

This set moves them on the struct net. Or, more precisely, on the struct netns\_ipv6, which is already added.

Unfortunately, many code in the ipv6 cannot yet provide a correct struct net to get the ipv6\_devconf from (e.g. routing code), so this part of job is to be done after the appropriate parts are virtualized.

However, after this set user can play with the ipv6\_devconf inside a namespace not affecting the others.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

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Subject: [PATCH net-2.6.25 1/6][NETNS]: Clean out the ipv6-related sysctls creation/destruction

Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 13:58:53 GMT

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The addrconf sysctls and neigh sysctls are registered and unregistered always in pairs, so they can be joined into one (well, two) functions, that accept the struct inet6\_dev and do all the job.

This also get rids of unneeded ifdefs inside the code.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```
net/ipv6/addrconf.c | 63 ++++++-----  
1 files changed, 34 insertions(+), 29 deletions(-)
```

```
diff --git a/net/ipv6/addrconf.c b/net/ipv6/addrconf.c
```

```
index 6a48bb8..27b35dd 100644
```

```
--- a/net/ipv6/addrconf.c
```

```
+++ b/net/ipv6/addrconf.c
```

```
@@ -102,7 +102,15 @@
```

```
#ifdef CONFIG_SYSCTL  
static void addrconf_sysctl_register(struct inet6_dev *idev);
```

```

-static void addrconf_sysctl_unregister(struct ipv6_devconf *p);
+static void addrconf_sysctl_unregister(struct inet6_dev *idev);
+#else
+static inline void addrconf_sysctl_register(struct inet6_dev *idev)
+{
+}
+
+static inline void addrconf_sysctl_unregister(struct inet6_dev *idev)
+{
+}
#endif

#ifdef CONFIG_IPV6_PRIVACY
@@ -392,13 +400,7 @@ static struct inet6_dev * ipv6_add_dev(struct net_device *dev)

    ipv6_mc_init_dev(ndev);
    ndev->tstamp = jiffies;
-#ifdef CONFIG_SYSCTL
- neigh_sysctl_register(dev, ndev->nd_parms, NET_IPV6,
-     NET_IPV6_NEIGH, "ipv6",
-     &ndisc_ifinfo_sysctl_change,
-     NULL);
    addrconf_sysctl_register(ndev);
-#endif
    /* protected by rtnl_lock */
    rcu_assign_pointer(dev->ip6_ptr, ndev);

@@ -2391,15 +2393,8 @@ static int addrconf_notify(struct notifier_block *this, unsigned long
event,
    case NETDEV_CHANGENAME:
        if (idev) {
            snmp6_unregister_dev(idev);
-#ifdef CONFIG_SYSCTL
- addrconf_sysctl_unregister(&idev->cnf);
- neigh_sysctl_unregister(idev->nd_parms);
- neigh_sysctl_register(dev, idev->nd_parms,
-     NET_IPV6, NET_IPV6_NEIGH, "ipv6",
-     &ndisc_ifinfo_sysctl_change,
-     NULL);
+ addrconf_sysctl_unregister(idev);
+ addrconf_sysctl_register(idev);
-#endif
            err = snmp6_register_dev(idev);
            if (err)
                return notifier_from_errno(err);
@@ -2523,10 +2518,7 @@ static int addrconf_ifdown(struct net_device *dev, int how)
    /* Shot the device (if unregistered) */

```

```

    if (how == 1) {
-#ifdef CONFIG_SYSCTL
-   addrconf_sysctl_unregister(&idev->cnf);
-   neigh_sysctl_unregister(idev->nd_parms);
-#endif
+   addrconf_sysctl_unregister(idev);
+   neigh_parms_release(&nd_tbl, idev->nd_parms);
+   neigh_ifdown(&nd_tbl, dev);
+   in6_dev_put(idev);
@@ -4106,21 +4098,34 @@ out:
    return;
}

+static void __addrconf_sysctl_unregister(struct ipv6_devconf *p)
+{
+ struct addrconf_sysctl_table *t;
+
+ if (p->sysctl == NULL)
+ return;
+
+ t = p->sysctl;
+ p->sysctl = NULL;
+ unregister_sysctl_table(t->sysctl_header);
+ kfree(t->dev_name);
+ kfree(t);
+}
+
static void addrconf_sysctl_register(struct inet6_dev *idev)
{
+ neigh_sysctl_register(idev->dev, idev->nd_parms, NET_IPV6,
+   NET_IPV6_NEIGH, "ipv6",
+   &ndisc_ifinfo_sysctl_change,
+   NULL);
+ __addrconf_sysctl_register(idev->dev->name, idev->dev->ifindex,
+   idev, &idev->cnf);
}

-static void addrconf_sysctl_unregister(struct ipv6_devconf *p)
+static void addrconf_sysctl_unregister(struct inet6_dev *idev)
{
- if (p->sysctl) {
-   struct addrconf_sysctl_table *t = p->sysctl;
-   p->sysctl = NULL;
-   unregister_sysctl_table(t->sysctl_header);
-   kfree(t->dev_name);
-   kfree(t);
- }
+ __addrconf_sysctl_unregister(&idev->cnf);

```

```
+ neigh_sysctl_unregister(idev->nd_parms);
}

@@ -4232,8 +4237,8 @@ void addrconf_cleanup(void)
    unregister_netdevice_notifier(&ipv6_dev_notf);

#ifdef CONFIG_SYSCTL
- addrconf_sysctl_unregister(&ipv6_devconf_dflt);
- addrconf_sysctl_unregister(&ipv6_devconf);
+ __addrconf_sysctl_unregister(&ipv6_devconf_dflt);
+ __addrconf_sysctl_unregister(&ipv6_devconf);
#endif

    rtnl_lock();
--
1.5.3.4
```

---

Subject: [PATCH net-2.6.25 2/6][NETNS]: Make the \_\_addrconf\_sysctl\_register return an error

Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 14:01:13 GMT

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---

This error code will be needed to abort the namespace creation if needed.

Probably, this is to be checked when a new device is created (currently it is ignored).

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```
net/ipv6/addrconf.c | 6 +++---
1 files changed, 3 insertions(+), 3 deletions(-)
```

```
diff --git a/net/ipv6/addrconf.c b/net/ipv6/addrconf.c
```

```
index 27b35dd..18d4334 100644
```

```
--- a/net/ipv6/addrconf.c
```

```
+++ b/net/ipv6/addrconf.c
```

```
@@ -4044,7 +4044,7 @@ static struct addrconf_sysctl_table
    },
};
```

```
-static void __addrconf_sysctl_register(char *dev_name, int ctl_name,
+static int __addrconf_sysctl_register(char *dev_name, int ctl_name,
    struct inet6_dev *idev, struct ipv6_devconf *p)
{
```

```

int i;
@@ -4088,14 +4088,14 @@ static void __addrconf_sysctl_register(char *dev_name, int
ctl_name,
    goto free_procname;

    p->sysctl = t;
- return;
+ return 0;

free_procname:
    kfree(t->dev_name);
free:
    kfree(t);
out:
- return;
+ return -ENOBUFS;
}

static void __addrconf_sysctl_unregister(struct ipv6_devconf *p)
--

```

1.5.3.4

---

Subject: [PATCH net-2.6.25 3/6][NETNS]: Make the ctl-tables per-namespace  
Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 14:03:10 GMT  
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---

This includes passing the net to \_\_addrconf\_sysctl\_register and saving this on the ctl\_table->extra2 to be used in handlers (those, needing it).

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```

net/ipv6/addrconf.c | 24 ++++++-----
1 files changed, 14 insertions(+), 10 deletions(-)

```

```

diff --git a/net/ipv6/addrconf.c b/net/ipv6/addrconf.c
index 18d4334..bde50c6 100644

```

```

--- a/net/ipv6/addrconf.c

```

```

+++ b/net/ipv6/addrconf.c

```

```

@@ -456,13 +456,13 @@ static void dev_forward_change(struct inet6_dev *idev)
}

```

```

-static void addrconf_forward_change(void)
+static void addrconf_forward_change(struct net *net)
{

```

```

struct net_device *dev;
struct inet6_dev *idev;

read_lock(&dev_base_lock);
- for_each_netdev(&init_net, dev) {
+ for_each_netdev(net, dev) {
    rcu_read_lock();
    idev = __in6_dev_get(dev);
    if (idev) {
@@ -478,12 +478,15 @@ static void addrconf_forward_change(void)

static void addrconf_fixup_forwarding(struct ctl_table *table, int *p, int old)
{
+ struct net *net;
+
+ net = (struct net *)table->extra2;
    if (p == &ipv6_devconf_dflt.forwarding)
        return;

    if (p == &ipv6_devconf.forwarding) {
        ipv6_devconf_dflt.forwarding = ipv6_devconf.forwarding;
- addrconf_forward_change();
+ addrconf_forward_change(net);
    } else if ((*p) ^ (!old))
        dev_forward_change((struct inet6_dev *)table->extra1);

@@ -4044,8 +4047,8 @@ static struct addrconf_sysctl_table
},
};

-static int __addrconf_sysctl_register(char *dev_name, int ctl_name,
- struct inet6_dev *idev, struct ipv6_devconf *p)
+static int __addrconf_sysctl_register(struct net *net, char *dev_name,
+ int ctl_name, struct inet6_dev *idev, struct ipv6_devconf *p)
{
    int i;
    struct addrconf_sysctl_table *t;
@@ -4068,6 +4071,7 @@ static int __addrconf_sysctl_register(char *dev_name, int ctl_name,
    for (i=0; t->addrconf_vars[i].data; i++) {
        t->addrconf_vars[i].data += (char*)p - (char*)&ipv6_devconf;
        t->addrconf_vars[i].extra1 = idev; /* embedded; no ref */
+ t->addrconf_vars[i].extra2 = net;
    }

/*
@@ -4082,7 +4086,7 @@ static int __addrconf_sysctl_register(char *dev_name, int ctl_name,
    addrconf_ctl_path[ADDRCONF_CTL_PATH_DEV].procname = t->dev_name;
    addrconf_ctl_path[ADDRCONF_CTL_PATH_DEV].ctl_name = ctl_name;

```

```

- t->sysctl_header = register_sysctl_paths(addrconf_ctl_path,
+ t->sysctl_header = register_net_sysctl_table(net, addrconf_ctl_path,
  t->addrconf_vars);
  if (t->sysctl_header == NULL)
    goto free_procname;
@@ -4118,8 +4122,8 @@ static void addrconf_sysctl_register(struct inet6_dev *idev)
    NET_IPV6_NEIGH, "ipv6",
    &ndisc_ifinfo_sysctl_change,
    NULL);
- __addrconf_sysctl_register(idev->dev->name, idev->dev->ifindex,
- idev, &idev->cnf);
+ __addrconf_sysctl_register(idev->dev->nd_net, idev->dev->name,
+ idev->dev->ifindex, idev, &idev->cnf);
}

```

```

static void addrconf_sysctl_unregister(struct inet6_dev *idev)
@@ -4215,9 +4219,9 @@ int __init addrconf_init(void)
  ipv6_addr_label_rtnl_register();

```

```

#ifdef CONFIG_SYSCTL
- __addrconf_sysctl_register("all", NET_PROTO_CONF_ALL,
+ __addrconf_sysctl_register(&init_net, "all", NET_PROTO_CONF_ALL,
  NULL, &ipv6_devconf);
- __addrconf_sysctl_register("default", NET_PROTO_CONF_DEFAULT,
+ __addrconf_sysctl_register(&init_net, "default", NET_PROTO_CONF_DEFAULT,
  NULL, &ipv6_devconf_dflt);
#endif

```

--  
1.5.3.4

---

Subject: [PATCH net-2.6.25 4/6][NETNS]: Create ipv6 devconf-s for namespaces  
 Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 14:06:49 GMT  
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---

This is the core. Declare and register the pernet subsys for addrconf. The init callback will create the devconf-s.

The init\_net will reuse the existing statically declared confs, so that accessing them from inside the ipv6 code will still work.

The register\_pernet\_subsys() is moved above the ipv6\_add\_dev() call for loopback, because this function will need the net->devconf\_dflt pointer to be already set.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```
include/net/netns/ipv6.h | 2 +
net/ipv6/addrconf.c      | 82 ++++++-----
2 files changed, 72 insertions(+), 12 deletions(-)
```

diff --git a/include/net/netns/ipv6.h b/include/net/netns/ipv6.h

index 10733a6..06b4dc0 100644

--- a/include/net/netns/ipv6.h

+++ b/include/net/netns/ipv6.h

@@ -28,5 +28,7 @@ struct netns\_sysctl\_ipv6 {

```
struct netns_ipv6 {
    struct netns_sysctl_ipv6 sysctl;
+ struct ipv6_devconf *devconf_all;
+ struct ipv6_devconf *devconf_dflt;
};
#endif
```

diff --git a/net/ipv6/addrconf.c b/net/ipv6/addrconf.c

index bde50c6..3ad081e 100644

--- a/net/ipv6/addrconf.c

+++ b/net/ipv6/addrconf.c

@@ -4135,6 +4135,70 @@ static void addrconf\_sysctl\_unregister(struct inet6\_dev \*idev)

```
#endif
```

```
+static int addrconf_init_net(struct net *net)
```

```
+{
```

```
+ int err;
```

```
+ struct ipv6_devconf *all, *dflt;
```

```
+
```

```
+ err = -ENOMEM;
```

```
+ all = &ipv6_devconf;
```

```
+ dflt = &ipv6_devconf_dflt;
```

```
+
```

```
+ if (net != &init_net) {
```

```
+ all = kmemdup(all, sizeof(ipv6_devconf), GFP_KERNEL);
```

```
+ if (all == NULL)
```

```
+ goto err_alloc_all;
```

```
+
```

```
+ dflt = kmemdup(dflt, sizeof(ipv6_devconf_dflt), GFP_KERNEL);
```

```
+ if (dflt == NULL)
```

```
+ goto err_alloc_dflt;
```

```
+ }
```

```
+
```

```
+ net->ipv6.devconf_all = all;
```

```
+ net->ipv6.devconf_dflt = dflt;
```



```

+
+ #ifdef CONFIG_SYSCTL
+ err = __addrconf_sysctl_register(net, "all", NET_PROTO_CONF_ALL,
+ NULL, all);
+ if (err < 0)
+ goto err_reg_all;
+
+ err = __addrconf_sysctl_register(net, "default", NET_PROTO_CONF_DEFAULT,
+ NULL, dflt);
+ if (err < 0)
+ goto err_reg_dflt;
+ #endif
+ return 0;
+
+ #ifdef CONFIG_SYSCTL
+err_reg_dflt:
+ __addrconf_sysctl_unregister(all);
+err_reg_all:
+ kfree(dflt);
+ #endif
+err_alloc_dflt:
+ kfree(all);
+err_alloc_all:
+ return err;
+}
+
+static void addrconf_exit_net(struct net *net)
+{
+ #ifdef CONFIG_SYSCTL
+ __addrconf_sysctl_unregister(net->ipv6.devconf_dflt);
+ __addrconf_sysctl_unregister(net->ipv6.devconf_all);
+ #endif
+ if (net != &init_net) {
+ kfree(net->ipv6.devconf_dflt);
+ kfree(net->ipv6.devconf_all);
+ }
+}
+
+static struct pernet_operations addrconf_ops = {
+ .init = addrconf_init_net,
+ .exit = addrconf_exit_net,
+};
+
+/*
+ * Device notifier
+ */
@@ -4167,6 +4231,8 @@ int __init addrconf_init(void)
return err;

```

```

}

+ register_pernet_subsys(&addrconf_ops);
+
/* The addrconf netdev notifier requires that loopback_dev
 * has it's ipv6 private information allocated and setup
 * before it can bring up and give link-local addresses
@@ -4190,7 +4256,7 @@ int __init addrconf_init(void)
    err = -ENOMEM;
    rtnl_unlock();
    if (err)
- return err;
+ goto errlo;

    ip6_null_entry.u.dst.dev = init_net.loopback_dev;
    ip6_null_entry.rt6i_idev = in6_dev_get(init_net.loopback_dev);
@@ -4218,16 +4284,11 @@ int __init addrconf_init(void)

    ipv6_addr_label_rtnl_register();

-#ifdef CONFIG_SYSCTL
- __addrconf_sysctl_register(&init_net, "all", NET_PROTO_CONF_ALL,
- NULL, &ipv6_devconf);
- __addrconf_sysctl_register(&init_net, "default", NET_PROTO_CONF_DEFAULT,
- NULL, &ipv6_devconf_dflt);
-#endif
-
    return 0;
errout:
    unregister_netdevice_notifier(&ipv6_dev_notf);
+errlo:
+ unregister_pernet_subsys(&addrconf_ops);

    return err;
}
@@ -4240,10 +4301,7 @@ void addrconf_cleanup(void)

    unregister_netdevice_notifier(&ipv6_dev_notf);

-#ifdef CONFIG_SYSCTL
- __addrconf_sysctl_unregister(&ipv6_devconf_dflt);
- __addrconf_sysctl_unregister(&ipv6_devconf);
-#endif
+ unregister_pernet_subsys(&addrconf_ops);

    rtnl_lock();

--

```

---

Subject: [PATCH net-2.6.25 5/6][NETNS]: Use the per-net ipv6\_devconf\_dflt  
 Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 14:08:24 GMT

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---

All its users are in net/ipv6/addrconf.c's sysctl handlers.  
 Since they already have the struct net to get from, the  
 per-net ipv6\_devconf\_dflt can already be used.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

```

---
net/ipv6/addrconf.c | 6 +++---
1 files changed, 3 insertions(+), 3 deletions(-)

diff --git a/net/ipv6/addrconf.c b/net/ipv6/addrconf.c
index 3ad081e..9b96de3 100644
--- a/net/ipv6/addrconf.c
+++ b/net/ipv6/addrconf.c
@@ -334,7 +334,7 @@ static struct inet6_dev * ipv6_add_dev(struct net_device *dev)

    rwlock_init(&ndev->lock);
    ndev->dev = dev;
- memcpy(&ndev->cnf, &ipv6_devconf_dflt, sizeof(ndev->cnf));
+ memcpy(&ndev->cnf, dev->nd_net->ipv6.devconf_dflt, sizeof(ndev->cnf));
    ndev->cnf.mtu6 = dev->mtu;
    ndev->cnf.sysctl = NULL;
    ndev->nd_parms = neigh_parms_alloc(dev, &nd_tbl);
@@ -481,11 +481,11 @@ static void addrconf_fixup_forwarding(struct ctl_table *table, int *p, int
old)
    struct net *net;

    net = (struct net *)table->extra2;
- if (p == &ipv6_devconf_dflt.forwarding)
+ if (p == &net->ipv6.devconf_dflt->forwarding)
    return;

    if (p == &ipv6_devconf.forwarding) {
- ipv6_devconf_dflt.forwarding = ipv6_devconf.forwarding;
+ net->ipv6.devconf_dflt->forwarding = ipv6_devconf.forwarding;
    addrconf_forward_change(net);
    } else if ((!*p) ^ (!old))
    dev_forward_change((struct inet6_dev *)table->extra1);
--

```

Subject: [PATCH net-2.6.25 6/6][NETNS]: Use the per-net ipv6\_devconf(\_all) in sysctl handlers

Posted by [Pavel Emelianov](#) on Thu, 10 Jan 2008 14:10:44 GMT

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---

Actually the net->ipv6.devconf\_all can be used in a few places, but to keep the /proc/sys/net/ipv6/conf/ sysctls work consistently in the namespace we should use the per-net devconf\_all in the sysctl "forwarding" handler.

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```
net/ipv6/addrconf.c | 13 ++++++-----
1 files changed, 7 insertions(+), 6 deletions(-)
```

```
diff --git a/net/ipv6/addrconf.c b/net/ipv6/addrconf.c
```

```
index 9b96de3..cd90f9a 100644
```

```
--- a/net/ipv6/addrconf.c
```

```
+++ b/net/ipv6/addrconf.c
```

```
@@ -456,7 +456,7 @@ static void dev_forward_change(struct inet6_dev *idev)
}
```

```
-static void addrconf_forward_change(struct net *net)
```

```
+static void addrconf_forward_change(struct net *net, __s32 newf)
```

```
{
    struct net_device *dev;
    struct inet6_dev *idev;
@@ -466,8 +466,8 @@ static void addrconf_forward_change(struct net *net)
```

```
    rcu_read_lock();
    idev = __in6_dev_get(dev);
    if (idev) {
-   int changed = (!idev->cnf.forwarding) ^ (!ipv6_devconf.forwarding);
```

```
-   idev->cnf.forwarding = ipv6_devconf.forwarding;
```

```
+   int changed = (!idev->cnf.forwarding) ^ (!newf);
```

```
+   idev->cnf.forwarding = newf;
```

```
    if (changed)
        dev_forward_change(idev);
}
```

```
@@ -484,9 +484,10 @@ static void addrconf_fixup_forwarding(struct ctl_table *table, int *p, int old)
```

```
    if (p == &net->ipv6.devconf_dflt->forwarding)
        return;
```

```
- if (p == &ipv6_devconf.forwarding) {
```

```
-   net->ipv6.devconf_dflt->forwarding = ipv6_devconf.forwarding;
```

```
-   addrconf_forward_change(net);
```

```
+ if (p == &net->ipv6.devconf_all->forwarding) {
```

```
+ __s32 newf = net->ipv6.devconf_all->forwarding;
+ net->ipv6.devconf_dflt->forwarding = newf;
+ addrconf_forward_change(net, newf);
  } else if ((!*p) ^ (!old))
    dev_forward_change((struct inet6_dev *)table->extra1);
```

--

1.5.3.4

---

---

Subject: Re: [PATCH net-2.6.25 0/6][NETNS]: Make ipv6\_devconf (all and default) live in net namespaces

Posted by [davem](#) on Fri, 11 Jan 2008 01:54:12 GMT

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---

From: Pavel Emelyanov <xemul@openvz.org>

Date: Thu, 10 Jan 2008 16:55:12 +0300

> The ipv6\_devconf\_(all) and ipv6\_devconf\_dflt are currently  
> global, but should be per-namespace.

>

> This set moves them on the struct net. Or, more precisely,  
> on the struct netns\_ipv6, which is already added.

>

> Unfortunately, many code in the ipv6 cannot yet provide a  
> correct struct net to get the ipv6\_devconf from (e.g. routing  
> code), so this part of job is to be done after the appropriate  
> parts are virtualized.

>

> However, after this set user can play with the ipv6\_devconf  
> inside a namespace not affecting the others.

>

> Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

All 6 patches applied, thanks Pavel.

---