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Subject: [PATCH 1/4] NFS: make nfs\_client\_list per net ns  
Posted by [Stanislav Kinsbursky](#) on Mon, 23 Jan 2012 17:26:05 GMT  
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This patch splits global list of NFS clients into per-net-ns array of lists.  
This looks more strict and clearer.  
BTW, this patch also makes "/proc/fs/nfsfs/servers" entry content depends on /proc mount owner pid namespace. See below for details.

NOTE: few words about how was /proc/fs/nfsfs/ entries content show per network namespace done. This is a little bit tricky and not the best is could be. But it's cheap (proper fix for /proc containerization is a hard nut to crack).  
The idea is simple: take proper network namespace from pid namespace child reaper nsproxy of /proc/ mount creator.  
This actually means, that if there are 2 containers with different net namespace sharing pid namespace, then read of /proc/fs/nfsfs/ entries will always return content, taken from net namespace of pid namespace creator task (and thus second namespace set will be invisible).

Signed-off-by: Stanislav Kinsbursky <[skinsbursky@parallels.com](mailto:skinsbursky@parallels.com)>

```
---
fs/nfs/client.c | 38 ++++++-----
fs/nfs/idmap.c  |  5 +---
fs/nfs/inode.c  |  1 +
fs/nfs/internal.h |  2 +-
fs/nfs/netns.h  |  1 +
5 files changed, 32 insertions(+), 15 deletions(-)
```

```
diff --git a/fs/nfs/client.c b/fs/nfs/client.c
index 98af1cb..058eb9b 100644
```

```
--- a/fs/nfs/client.c
+++ b/fs/nfs/client.c
@@ -39,6 +39,8 @@
#include <net/ipv6.h>
#include <linux/nfs_xdr.h>
#include <linux/sunrpc/bc_xprt.h>
+#include <linux/nsproxy.h>
+#include <linux/pid_namespace.h>
```

```
#include <asm/system.h>
```

```
@@ -49,11 +51,11 @@
#include "internal.h"
#include "fscache.h"
#include "pnfs.h"
+#include "netns.h"
```

```

#define NFSDBG_FACILITY NFSDBG_CLIENT

DEFINE_SPINLOCK(nfs_client_lock);
- LIST_HEAD(nfs_client_list);
static LIST_HEAD(nfs_volume_list);
static DECLARE_WAIT_QUEUE_HEAD(nfs_client_active_wq);
#ifdef CONFIG_NFS_V4
@@ -464,8 +466,9 @@ static struct nfs_client *nfs_match_client(const struct nfs_client_initdata
*dat
{
    struct nfs_client *clp;
    const struct sockaddr *sap = data->addr;
+ struct nfs_net *nn = net_generic(data->net, nfs_net_id);

- list_for_each_entry(clp, &nfs_client_list, cl_share_link) {
+ list_for_each_entry(clp, &nn->nfs_client_list, cl_share_link) {
    const struct sockaddr *clap = (struct sockaddr *)&clp->cl_addr;
    /* Don't match clients that failed to initialise properly */
    if (clp->cl_cons_state < 0)
@@ -483,9 +486,6 @@ static struct nfs_client *nfs_match_client(const struct nfs_client_initdata
*dat
    /* Match the full socket address */
    if (!nfs_sockaddr_cmp(sap, clap))
        continue;
- /* Match network namespace */
- if (clp->net != data->net)
- continue;

    atomic_inc(&clp->cl_count);
    return clp;
@@ -506,6 +506,7 @@ nfs_get_client(const struct nfs_client_initdata *cl_init,
{
    struct nfs_client *clp, *new = NULL;
    int error;
+ struct nfs_net *nn = net_generic(cl_init->net, nfs_net_id);

    dprintk("--> nfs_get_client(%s,v%u)\n",
        cl_init->hostname ? "" : "", cl_init->rpc_ops->version);
@@ -531,7 +532,7 @@ nfs_get_client(const struct nfs_client_initdata *cl_init,
    /* install a new client and return with it unready */
install_client:
    clp = new;
- list_add(&clp->cl_share_link, &nfs_client_list);
+ list_add(&clp->cl_share_link, &nn->nfs_client_list);
    spin_unlock(&nfs_client_lock);

    error = cl_init->rpc_ops->init_client(clp, timeparms, ip_addr,
@@ -1227,9 +1228,10 @@ nfs4_find_client_sessionid(const struct sockaddr *addr,

```

```

    struct nfs4_sessionid *sid)
{
    struct nfs_client *clp;
+ struct nfs_net *nn = net_generic(&init_net, nfs_net_id);

    spin_lock(&nfs_client_lock);
- list_for_each_entry(clp, &nfs_client_list, cl_share_link) {
+ list_for_each_entry(clp, &nn->nfs_client_list, cl_share_link) {
    if (nfs4_cb_match_client(addr, clp, 1) == false)
        continue;

@@ -1757,6 +1759,13 @@ out_free_server:
    return ERR_PTR(error);
}

+void nfs_clients_init(struct net *net)
+{
+ struct nfs_net *nn = net_generic(net, nfs_net_id);
+
+ INIT_LIST_HEAD(&nn->nfs_client_list);
+}
+
#ifdef CONFIG_PROC_FS
static struct proc_dir_entry *proc_fs_nfs;

@@ -1810,13 +1819,15 @@ static int nfs_server_list_open(struct inode *inode, struct file *file)
{
    struct seq_file *m;
    int ret;
+ struct pid_namespace *pid_ns = file->f_dentry->d_sb->s_fs_info;
+ struct net *net = pid_ns->child_reaper->nsproxy->net_ns;

    ret = seq_open(file, &nfs_server_list_ops);
    if (ret < 0)
        return ret;

    m = file->private_data;
- m->private = PDE(inode)->data;
+ m->private = net;

    return 0;
}

@@ -1826,9 +1837,11 @@ static int nfs_server_list_open(struct inode *inode, struct file *file)
*/
static void *nfs_server_list_start(struct seq_file *m, loff_t *_pos)
{
+ struct nfs_net *nn = net_generic(m->private, nfs_net_id);
+

```

```

/* lock the list against modification */
spin_lock(&nfs_client_lock);
- return seq_list_start_head(&nfs_client_list, *_pos);
+ return seq_list_start_head(&nn->nfs_client_list, *_pos);
}

/*
@@ -1836,7 +1849,9 @@ static void *nfs_server_list_start(struct seq_file *m, loff_t *_pos)
*/
static void *nfs_server_list_next(struct seq_file *p, void *v, loff_t *pos)
{
- return seq_list_next(v, &nfs_client_list, pos);
+ struct nfs_net *nn = net_generic(p->private, nfs_net_id);
+
+ return seq_list_next(v, &nn->nfs_client_list, pos);
}

/*
@@ -1853,9 +1868,10 @@ static void nfs_server_list_stop(struct seq_file *p, void *v)
static int nfs_server_list_show(struct seq_file *m, void *v)
{
    struct nfs_client *clp;
+ struct nfs_net *nn = net_generic(m->private, nfs_net_id);

    /* display header on line 1 */
- if (v == &nfs_client_list) {
+ if (v == &nn->nfs_client_list) {
    seq_puts(m, "NV SERVER  PORT USE HOSTNAME\n");
    return 0;
}
diff --git a/fs/nfs/idmap.c b/fs/nfs/idmap.c
index ff084d2..92deaf8 100644
--- a/fs/nfs/idmap.c
+++ b/fs/nfs/idmap.c
@@ -571,13 +571,12 @@ static int rpc_pipefs_event(struct notifier_block *nb, unsigned long
event,
    void *ptr)
{
    struct super_block *sb = ptr;
+ struct nfs_net *nn = net_generic(sb->s_fs_info, nfs_net_id);
    struct nfs_client *clp;
    int error = 0;

    spin_lock(&nfs_client_lock);
- list_for_each_entry(clp, &nfs_client_list, cl_share_link) {
- if (clp->net != sb->s_fs_info)
- continue;
+ list_for_each_entry(clp, &nn->nfs_client_list, cl_share_link) {

```

```

    if (clp->rpc_ops != &nfs_v4_clientops)
        continue;
    error = __rpc_pipefs_event(clp, event, sb);
diff --git a/fs/nfs/inode.c b/fs/nfs/inode.c
index d2c760e..e8f81e5 100644
--- a/fs/nfs/inode.c
+++ b/fs/nfs/inode.c
@@ -1558,6 +1558,7 @@ EXPORT_SYMBOL_GPL(nfs_net_id);

static int nfs_net_init(struct net *net)
{
+ nfs_clients_init(net);
    return nfs_dns_resolver_cache_init(net);
}

diff --git a/fs/nfs/internal.h b/fs/nfs/internal.h
index cdb121d..a9ae806 100644
--- a/fs/nfs/internal.h
+++ b/fs/nfs/internal.h
@@ -146,6 +146,7 @@ extern void nfs_umount(const struct nfs_mount_request *info);

/* client.c */
extern const struct rpc_program nfs_program;
+extern void nfs_clients_init(struct net *net);

extern void nfs_cleanup_cb_ident_idr(void);
extern void nfs_put_client(struct nfs_client *);
@@ -183,7 +184,6 @@ static inline void nfs_fs_proc_exit(void)
#endif
#ifdef CONFIG_NFS_V4
extern spinlock_t nfs_client_lock;
-extern struct list_head nfs_client_list;
#endif

/* nfs4namespace.c */
diff --git a/fs/nfs/netns.h b/fs/nfs/netns.h
index 39ae4ca..feb33c3 100644
--- a/fs/nfs/netns.h
+++ b/fs/nfs/netns.h
@@ -7,6 +7,7 @@
struct nfs_net {
    struct cache_detail *nfs_dns_resolve;
    struct rpc_pipe *bl_device_pipe;
+ struct list_head nfs_client_list;
};

extern int nfs_net_id;

```

---



---

Subject: Re: [PATCH 1/4] NFS: make nfs\_client\_list per net ns  
Posted by [Bryan Schumaker](#) on Tue, 07 Feb 2012 15:32:04 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

I fixed up my bisect and identified this patch instead. The problem I'm seeing is:

```
CC [M] fs/nfs/delegation.o
CC [M] fs/nfs/idmap.o
fs/nfs/idmap.c: In function 'rpc_pipefs_event':
fs/nfs/idmap.c:535:9: error: implicit declaration of function 'net_generic'
[-Werror=implicit-function-declaration]
fs/nfs/idmap.c:535:50: error: 'nfs_net_id' undeclared (first use in this function)
fs/nfs/idmap.c:535:50: note: each undeclared identifier is reported only once for each function it
appears in
fs/nfs/idmap.c:540:82: error: dereferencing pointer to incomplete type
fs/nfs/idmap.c:540:224: error: dereferencing pointer to incomplete type
cc1: some warnings being treated as errors

make[2]: *** [fs/nfs/idmap.o] Error 1
make[1]: *** [fs/nfs] Error 2
make: *** [fs] Error 2
```

I think you need to add: #include "netns.h" to idmap.c.

- Bryan

On 01/23/12 12:26, Stanislav Kinsbursky wrote:

```
> This patch splits global list of NFS clients into per-net-ns array of lists.
> This looks more strict and clearer.
> BTW, this patch also makes "/proc/fs/nfsfs/servers" entry content depends on
> /proc mount owner pid namespace. See below for details.
>
> NOTE: few words about how was /proc/fs/nfsfs/ entries content show per network
> namespace done. This is a little bit tricky and not the best is could be. But
> it's cheap (proper fix for /proc containerization is a hard nut to crack).
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> child reaper nsproxy of /proc/ mount creator.
> This actually means, that if there are 2 containers with different net
> namespace sharing pid namespace, then read of /proc/fs/nfsfs/ entries will
> always return content, taken from net namespace of pid namespace creator task
> (and thus second namespace set will be invisible).
>
> Signed-off-by: Stanislav Kinsbursky <skinsbursky@parallels.com>
>
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> fs/nfs/idmap.c  |  5 +---
> fs/nfs/inode.c  |  1 +
```

```

> fs/nfs/internal.h | 2 +-
> fs/nfs/netns.h | 1 +
> 5 files changed, 32 insertions(+), 15 deletions(-)
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> index 98af1cb..058eb9b 100644
> --- a/fs/nfs/client.c
> +++ b/fs/nfs/client.c
> @@ -39,6 +39,8 @@
> #include <net/ipv6.h>
> #include <linux/nfs_xdr.h>
> #include <linux/sunrpc/bc_xprt.h>
> +#include <linux/nsproxy.h>
> +#include <linux/pid_namespace.h>
>
> #include <asm/system.h>
>
> @@ -49,11 +51,11 @@
> #include "internal.h"
> #include "fscache.h"
> #include "pnfs.h"
> +#include "netns.h"
>
> #define NFSDBG_FACILITY NFSDBG_CLIENT
>
> DEFINE_SPINLOCK(nfs_client_lock);
> -LIST_HEAD(nfs_client_list);
> static LIST_HEAD(nfs_volume_list);
> static DECLARE_WAIT_QUEUE_HEAD(nfs_client_active_wq);
> #ifdef CONFIG_NFS_V4
> @@ -464,8 +466,9 @@ static struct nfs_client *nfs_match_client(const struct nfs_client_initdata
*dat
> {
> struct nfs_client *clp;
> const struct sockaddr *sap = data->addr;
> + struct nfs_net *nn = net_generic(data->net, nfs_net_id);
>
> - list_for_each_entry(clp, &nfs_client_list, cl_share_link) {
> + list_for_each_entry(clp, &nn->nfs_client_list, cl_share_link) {
> const struct sockaddr *clap = (struct sockaddr *)&clp->cl_addr;
> /* Don't match clients that failed to initialise properly */
> if (clp->cl_cons_state < 0)
> @@ -483,9 +486,6 @@ static struct nfs_client *nfs_match_client(const struct nfs_client_initdata
*dat
> /* Match the full socket address */
> if (!nfs_sockaddr_cmp(sap, clap))
> continue;
> - /* Match network namespace */

```

```

> - if (clp->net != data->net)
> - continue;
>
> atomic_inc(&clp->cl_count);
> return clp;
> @@ -506,6 +506,7 @@ nfs_get_client(const struct nfs_client_initdata *cl_init,
> {
> struct nfs_client *clp, *new = NULL;
> int error;
> + struct nfs_net *nn = net_generic(cl_init->net, nfs_net_id);
>
> dprintk("--> nfs_get_client(%s,v%u)\n",
> cl_init->hostname ?: "", cl_init->rpc_ops->version);
> @@ -531,7 +532,7 @@ nfs_get_client(const struct nfs_client_initdata *cl_init,
> /* install a new client and return with it unready */
> install_client:
> clp = new;
> - list_add(&clp->cl_share_link, &nfs_client_list);
> + list_add(&clp->cl_share_link, &nn->nfs_client_list);
> spin_unlock(&nfs_client_lock);
>
> error = cl_init->rpc_ops->init_client(clp, timeparms, ip_addr,
> @@ -1227,9 +1228,10 @@ nfs4_find_client_sessionid(const struct sockaddr *addr,
> struct nfs4_sessionid *sid)
> {
> struct nfs_client *clp;
> + struct nfs_net *nn = net_generic(&init_net, nfs_net_id);
>
> spin_lock(&nfs_client_lock);
> - list_for_each_entry(clp, &nfs_client_list, cl_share_link) {
> + list_for_each_entry(clp, &nn->nfs_client_list, cl_share_link) {
> if (nfs4_cb_match_client(addr, clp, 1) == false)
> continue;
>
> @@ -1757,6 +1759,13 @@ out_free_server:
> return ERR_PTR(error);
> }
>
> +void nfs_clients_init(struct net *net)
> +{
> + struct nfs_net *nn = net_generic(net, nfs_net_id);
> +
> + INIT_LIST_HEAD(&nn->nfs_client_list);
> +}
> +
> #ifdef CONFIG_PROC_FS
> static struct proc_dir_entry *proc_fs_nfs;
>

```



```

> @@ -1810,13 +1819,15 @@ static int nfs_server_list_open(struct inode *inode, struct file *file)
> {
>     struct seq_file *m;
>     int ret;
>     + struct pid_namespace *pid_ns = file->f_dentry->d_sb->s_fs_info;
>     + struct net *net = pid_ns->child_reaper->nsproxy->net_ns;
>
>     ret = seq_open(file, &nfs_server_list_ops);
>     if (ret < 0)
>         return ret;
>
>     m = file->private_data;
>     - m->private = PDE(inode)->data;
>     + m->private = net;
>
>     return 0;
> }
> @@ -1826,9 +1837,11 @@ static int nfs_server_list_open(struct inode *inode, struct file *file)
> */
> static void *nfs_server_list_start(struct seq_file *m, loff_t *_pos)
> {
>     + struct nfs_net *nn = net_generic(m->private, nfs_net_id);
>     +
>     /* lock the list against modification */
>     spin_lock(&nfs_client_lock);
>     - return seq_list_start_head(&nfs_client_list, *_pos);
>     + return seq_list_start_head(&nn->nfs_client_list, *_pos);
> }
>
> /*
> @@ -1836,7 +1849,9 @@ static void *nfs_server_list_start(struct seq_file *m, loff_t *_pos)
> */
> static void *nfs_server_list_next(struct seq_file *p, void *v, loff_t *pos)
> {
>     - return seq_list_next(v, &nfs_client_list, pos);
>     + struct nfs_net *nn = net_generic(p->private, nfs_net_id);
>     +
>     + return seq_list_next(v, &nn->nfs_client_list, pos);
> }
>
> /*
> @@ -1853,9 +1868,10 @@ static void nfs_server_list_stop(struct seq_file *p, void *v)
> static int nfs_server_list_show(struct seq_file *m, void *v)
> {
>     struct nfs_client *clp;
>     + struct nfs_net *nn = net_generic(m->private, nfs_net_id);
>
>     /* display header on line 1 */

```

```

> - if (v == &nfs_client_list) {
> + if (v == &nn->nfs_client_list) {
>   seq_puts(m, "NV SERVER  PORT USE HOSTNAME\n");
>   return 0;
> }
> diff --git a/fs/nfs/idmap.c b/fs/nfs/idmap.c
> index ff084d2..92deaf8 100644
> --- a/fs/nfs/idmap.c
> +++ b/fs/nfs/idmap.c
> @@ -571,13 +571,12 @@ static int rpc_pipefs_event(struct notifier_block *nb, unsigned long
event,
>   void *ptr)
> {
>   struct super_block *sb = ptr;
> + struct nfs_net *nn = net_generic(sb->s_fs_info, nfs_net_id);
>   struct nfs_client *clp;
>   int error = 0;
>
>   spin_lock(&nfs_client_lock);
> - list_for_each_entry(clp, &nfs_client_list, cl_share_link) {
> -   if (clp->net != sb->s_fs_info)
> -     continue;
> + list_for_each_entry(clp, &nn->nfs_client_list, cl_share_link) {
>   if (clp->rpc_ops != &nfs_v4_clientops)
>     continue;
>   error = __rpc_pipefs_event(clp, event, sb);
> diff --git a/fs/nfs/inode.c b/fs/nfs/inode.c
> index d2c760e..e8f81e5 100644
> --- a/fs/nfs/inode.c
> +++ b/fs/nfs/inode.c
> @@ -1558,6 +1558,7 @@ EXPORT_SYMBOL_GPL(nfs_net_id);
>
> static int nfs_net_init(struct net *net)
> {
> + nfs_clients_init(net);
>   return nfs_dns_resolver_cache_init(net);
> }
>
> diff --git a/fs/nfs/internal.h b/fs/nfs/internal.h
> index cdb121d..a9ae806 100644
> --- a/fs/nfs/internal.h
> +++ b/fs/nfs/internal.h
> @@ -146,6 +146,7 @@ extern void nfs_umount(const struct nfs_mount_request *info);
>
> /* client.c */
> extern const struct rpc_program nfs_program;
> +extern void nfs_clients_init(struct net *net);
>

```

```

> extern void nfs_cleanup_cb_ident_idr(void);
> extern void nfs_put_client(struct nfs_client *);
> @@ -183,7 +184,6 @@ static inline void nfs_fs_proc_exit(void)
> #endif
> #ifdef CONFIG_NFS_V4
> extern spinlock_t nfs_client_lock;
> -extern struct list_head nfs_client_list;
> #endif
>
> /* nfs4namespace.c */
> diff --git a/fs/nfs/netns.h b/fs/nfs/netns.h
> index 39ae4ca..feb33c3 100644
> --- a/fs/nfs/netns.h
> +++ b/fs/nfs/netns.h
> @@ -7,6 +7,7 @@
> struct nfs_net {
>     struct cache_detail *nfs_dns_resolve;
>     struct rpc_pipe *bl_device_pipe;
> + struct list_head nfs_client_list;
> };
>
> extern int nfs_net_id;
>
> --
> To unsubscribe from this list: send the line "unsubscribe linux-nfs" in
> the body of a message to majordomo@vger.kernel.org
> More majordomo info at http://vger.kernel.org/majordomo-info.html

```

---

Subject: Re: [PATCH 1/4] NFS: make nfs\_client\_list per net ns  
 Posted by [Myklebust, Trond](#) on Tue, 07 Feb 2012 15:34:48 GMT  
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---

On Tue, 2012-02-07 at 10:32 -0500, Bryan Schumaker wrote:

```

> I fixed up my bisect and identified this patch instead. The problem I'm seeing is:
>
> CC [M] fs/nfs/delegation.o
> CC [M] fs/nfs/idmap.o
> fs/nfs/idmap.c: In function 'rpc_pipefs_event':
> fs/nfs/idmap.c:535:9: error: implicit declaration of function 'net_generic'
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> fs/nfs/idmap.c:535:50: error: 'nfs_net_id' undeclared (first use in this function)
> fs/nfs/idmap.c:535:50: note: each undeclared identifier is reported only once for each function it
appears in
> fs/nfs/idmap.c:540:82: error: dereferencing pointer to incomplete type
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```

```
> make[2]: *** [fs/nfs/idmap.o] Error 1
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> make: *** [fs] Error 2
>
> I think you need to add: #include "netns.h" to idmap.c.
>
> - Bryan
```

That should already be there in the 'devel' branch. See commit  
17347d03c008e2f504c33bb4905cdad0abc01319.

--  
Trond Myklebust  
Linux NFS client maintainer

NetApp  
Trond.Myklebust@netapp.com  
www.netapp.com

---

---

Subject: Re: [PATCH 1/4] NFS: make nfs\_client\_list per net ns  
Posted by [Bryan Schumaker](#) on Tue, 07 Feb 2012 15:44:32 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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```
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it appears in
>> fs/nfs/idmap.c:540:82: error: dereferencing pointer to incomplete type
>> fs/nfs/idmap.c:540:224: error: dereferencing pointer to incomplete type
>> cc1: some warnings being treated as errors
>>
>> make[2]: *** [fs/nfs/idmap.o] Error 1
>> make[1]: *** [fs/nfs] Error 2
>> make: *** [fs] Error 2
>>
>> I think you need to add: #include "netns.h" to idmap.c.
>>
>> - Bryan
```

>  
> That should already be there in the 'devel' branch. See commit  
> 17347d03c008e2f504c33bb4905cdad0abc01319.  
>

Yes, but once I fixed this I was able to find the initial problem I was searching for (I have no idea how git led me to the wrong patch on my first attempt).

- Bryan

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