Subject: [PATCH 3/5] SUNRPC: create GSS auth cache per network namespace
Posted by Stanislav Kinsbursky on Thu, 19 Jan 2012 14:49:23 GMT
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This patch makes GSS auth cache details allocated and registered per network
namespace context.
Thus with this patch rsi_cache and rsc_cache contents for network namespace "X"
are controlled from proc file system mount for the same network namespace "X".

Signed-off-by: Stanislav Kinsbursky <skinsbursky@parallels.com>

---
 include/linux/sunrpc/svcauth_gss.h | 2
 net/sunrpc/auth_gss/auth_gss.c | 21 +++++
 net/sunrpc/auth_gss/svcauth_gss.c | 161 ++++++++++++++++++++++++++----------
 net/sunrpc/cache.c | 2
 net/sunrpc/netns.h | 2
 net/sunrpc/sunrpc_syms.c | 1
 6 files changed, 141 insertions(+), 48 deletions(-)

```
diff --git a/include/linux/sunrpc/svcauth_gss.h b/include/linux/sunrpc/svcauth_gss.h
index 83bbee3..7c32daa 100644
--- a/include/linux/sunrpc/svcauth_gss.h
+++ b/include/linux/sunrpc/svcauth_gss.h
@@ -18,6 +18,8 @@

 int gss_svc_init(void);
 void gss_svc_shutdown(void);
+int gss_svc_init_net(struct net *net);
+void gss_svc_shutdown_net(struct net *net);
 int svcauth_gss_register_pseudoflavor(u32 pseudoflavor, char * name);
 u32 svcauth_gss_flavor(struct auth_domain *dom);
 char *svc_gss_principal(struct svc_rqst *);
diff --git a/net/sunrpc/auth_gss/auth_gss.c b/net/sunrpc/auth_gss/auth_gss.c
index 9ef7fa3..5e02207 100644
--- a/net/sunrpc/auth_gss/auth_gss.c
+++ b/net/sunrpc/auth_gss/auth_gss.c
@@ -1662,6 +1662,21 @@ static const struct rpc_pipe_ops gss_upcall_ops_v1 = {
  .release_pipe = gss_pipe_release,
 };

+static __net_init int rpcsec_gss_init_net(struct net *net)
+{
+ return gss_svc_init_net(net);
+}
+
+static __net_exit void rpcsec_gss_exit_net(struct net *net)
+{
```

```
+ gss_svc_shutdown_net(net);
+}
+
+static struct pernet_operations rpcsec_gss_net_ops = {
+ .init = rpcsec_gss_init_net,
+ .exit = rpcsec_gss_exit_net,
+};
+
 /*
  * Initialize RPCSEC_GSS module
  */
@@ -1675,8 +1690,13 @@ static int __init init_rpcsec_gss(void)
  err = gss_svc_init();
  if (err)
   goto out_unregister;
+ err = register_pernet_subsys(&rpcsec_gss_net_ops);
+ if (err)
+  goto out_svc_exit;
  rpc_init_wait_queue(&pipe_version_rpc_waitqueue, "gss pipe version");
  return 0;
+out_svc_exit:
+ gss_svc_shutdown();
 out_unregister:
  rpcauth_unregister(&authgss_ops);
 out:
@@ -1685,6 +1705,7 @@ out:

 static void __exit exit_rpcsec_gss(void)
 {
+ unregister_pernet_subsys(&rpcsec_gss_net_ops);
  gss_svc_shutdown();
  rpcauth_unregister(&authgss_ops);
  rcu_barrier(); /* Wait for completion of call_rcu()'s */
diff --git a/net/sunrpc/auth_gss/svcauth_gss.c b/net/sunrpc/auth_gss/svcauth_gss.c
index 8d0f7d3..e544cd8 100644
--- a/net/sunrpc/auth_gss/svcauth_gss.c
+++ b/net/sunrpc/auth_gss/svcauth_gss.c
@@ -48,6 +48,8 @@
 #include <linux/sunrpc/svcauth_gss.h>
 #include <linux/sunrpc/cache.h>

+#include "../netns.h"
+
 #ifdef RPC_DEBUG
 # define RPCDBG_FACILITY RPCDBG_AUTH
 #endif
@@ -75,10 +77,8 @@ struct rsi {
  int   major_status, minor_status;
```

```
 };

-static struct cache_head *rsi_table[RSI_HASHMAX];
-static struct cache_detail rsi_cache;
-static struct rsi *rsi_update(struct rsi *new, struct rsi *old);
-static struct rsi *rsi_lookup(struct rsi *item);
+static struct rsi *rsi_update(struct cache_detail *cd, struct rsi *new, struct rsi *old);
+static struct rsi *rsi_lookup(struct cache_detail *cd, struct rsi *item);

 static void rsi_free(struct rsi *rsii)
 {
@@ -216,7 +216,7 @@ static int rsi_parse(struct cache_detail *cd,
  if (dup_to_netobj(&rsii.in_token, buf, len))
   goto out;

- rsip = rsi_lookup(&rsii);
+ rsip = rsi_lookup(cd, &rsii);
  if (!rsip)
   goto out;

@@ -258,12 +258,12 @@ static int rsi_parse(struct cache_detail *cd,
  if (dup_to_netobj(&rsii.out_token, buf, len))
   goto out;
  rsii.h.expiry_time = expiry;
- rsip = rsi_update(&rsii, rsip);
+ rsip = rsi_update(cd, &rsii, rsip);
  status = 0;
 out:
  rsi_free(&rsii);
  if (rsip)
-  cache_put(&rsip->h, &rsi_cache);
+  cache_put(&rsip->h, cd);
  else
   status = -ENOMEM;
  return status;
@@ -272,7 +272,6 @@ out:
 static struct cache_detail rsi_cache = {
  .owner  = THIS_MODULE,
  .hash_size = RSI_HASHMAX,
- .hash_table     = rsi_table,
  .name           = "auth.rpcsec.init",
  .cache_put      = rsi_put,
  .cache_upcall   = rsi_upcall,
@@ -283,24 +282,24 @@ static struct cache_detail rsi_cache = {
  .alloc  = rsi_alloc,
 };

-static struct rsi *rsi_lookup(struct rsi *item)
```

```
+static struct rsi *rsi_lookup(struct cache_detail *cd, struct rsi *item)
 {
  struct cache_head *ch;
  int hash = rsi_hash(item);

- ch = sunrpc_cache_lookup(&rsi_cache, &item->h, hash);
+ ch = sunrpc_cache_lookup(cd, &item->h, hash);
  if (ch)
   return container_of(ch, struct rsi, h);
  else
   return NULL;
 }

-static struct rsi *rsi_update(struct rsi *new, struct rsi *old)
+static struct rsi *rsi_update(struct cache_detail *cd, struct rsi *new, struct rsi *old)
 {
  struct cache_head *ch;
  int hash = rsi_hash(new);

- ch = sunrpc_cache_update(&rsi_cache, &new->h,
+ ch = sunrpc_cache_update(cd, &new->h,
      &old->h, hash);
  if (ch)
   return container_of(ch, struct rsi, h);
@@ -339,10 +338,8 @@ struct rsc {
  char   *client_name;
 };

-static struct cache_head *rsc_table[RSC_HASHMAX];
-static struct cache_detail rsc_cache;
-static struct rsc *rsc_update(struct rsc *new, struct rsc *old);
-static struct rsc *rsc_lookup(struct rsc *item);
+static struct rsc *rsc_update(struct cache_detail *cd, struct rsc *new, struct rsc *old);
+static struct rsc *rsc_lookup(struct cache_detail *cd, struct rsc *item);

 static void rsc_free(struct rsc *rsci)
 {
@@ -444,7 +441,7 @@ static int rsc_parse(struct cache_detail *cd,
  if (expiry == 0)
   goto out;

- rscp = rsc_lookup(&rsci);
+ rscp = rsc_lookup(cd, &rsci);
  if (!rscp)
   goto out;

@@ -506,13 +503,13 @@ static int rsc_parse(struct cache_detail *cd,
```

```
  }
  rsci.h.expiry_time = expiry;
- rscp = rsc_update(&rsci, rscp);
+ rscp = rsc_update(cd, &rsci, rscp);
  status = 0;
 out:
  gss_mech_put(gm);
  rsc_free(&rsci);
  if (rscp)
-  cache_put(&rscp->h, &rsc_cache);
+  cache_put(&rscp->h, cd);
  else
   status = -ENOMEM;
  return status;
@@ -521,7 +518,6 @@ out:
 static struct cache_detail rsc_cache = {
  .owner  = THIS_MODULE,
  .hash_size = RSC_HASHMAX,
- .hash_table = rsc_table,
  .name  = "auth.rpcsec.context",
  .cache_put = rsc_put,
  .cache_parse = rsc_parse,
@@ -531,24 +527,24 @@ static struct cache_detail rsc_cache = {
 };

-static struct rsc *rsc_lookup(struct rsc *item)
+static struct rsc *rsc_lookup(struct cache_detail *cd, struct rsc *item)
 {
  struct cache_head *ch;
  int hash = rsc_hash(item);

- ch = sunrpc_cache_lookup(&rsc_cache, &item->h, hash);
+ ch = sunrpc_cache_lookup(cd, &item->h, hash);
  if (ch)
   return container_of(ch, struct rsc, h);
  else
   return NULL;
 }

-static struct rsc *rsc_update(struct rsc *new, struct rsc *old)
+static struct rsc *rsc_update(struct cache_detail *cd, struct rsc *new, struct rsc *old)
 {
  struct cache_head *ch;
  int hash = rsc_hash(new);

- ch = sunrpc_cache_update(&rsc_cache, &new->h,
+ ch = sunrpc_cache_update(cd, &new->h,
```

```
      &old->h, hash);
  if (ch)
   return container_of(ch, struct rsc, h);
@@ -558,7 +554,7 @@ static struct rsc *rsc_update(struct rsc *new, struct rsc *old)


 static struct rsc *
-gss_svc_searchbyctx(struct xdr_netobj *handle)
+gss_svc_searchbyctx(struct cache_detail *cd, struct xdr_netobj *handle)
 {
  struct rsc rsci;
  struct rsc *found;
@@ -566,11 +562,11 @@ gss_svc_searchbyctx(struct xdr_netobj *handle)
  memset(&rsci, 0, sizeof(rsci));
  if (dup_to_netobj(&rsci.handle, handle->data, handle->len))
   return NULL;
- found = rsc_lookup(&rsci);
+ found = rsc_lookup(cd, &rsci);
  rsc_free(&rsci);
  if (!found)
   return NULL;
- if (cache_check(&rsc_cache, &found->h, NULL))
+ if (cache_check(cd, &found->h, NULL))
   return NULL;
  return found;
 }
@@ -968,20 +964,20 @@ svcauth_gss_set_client(struct svc_rqst *rqstp)
 }

 static inline int
-gss_write_init_verf(struct svc_rqst *rqstp, struct rsi *rsip)
+gss_write_init_verf(struct cache_detail *cd, struct svc_rqst *rqstp, struct rsi *rsip)
 {
  struct rsc *rsci;
  int        rc;

  if (rsip->major_status != GSS_S_COMPLETE)
   return gss_write_null_verf(rqstp);
- rsci = gss_svc_searchbyctx(&rsip->out_handle);
+ rsci = gss_svc_searchbyctx(cd, &rsip->out_handle);
  if (rsci == NULL) {
   rsip->major_status = GSS_S_NO_CONTEXT;
   return gss_write_null_verf(rqstp);
  }
  rc = gss_write_verf(rqstp, rsci->mechctx, GSS_SEQ_WIN);
- cache_put(&rsci->h, &rsc_cache);
+ cache_put(&rsci->h, cd);
  return rc;
```

```
 }

@@ -1000,6 +996,7 @@ static int svcauth_gss_handle_init(struct svc_rqst *rqstp,
  struct xdr_netobj tmpobj;
  struct rsi *rsip, rsikey;
  int ret;
+ struct sunrpc_net *sn = net_generic(rqstp->rq_xprt->xpt_net, sunrpc_net_id);

  /* Read the verifier; should be NULL: */
  *authp = rpc_autherr_badverf;
@@ -1028,17 +1025,17 @@ static int svcauth_gss_handle_init(struct svc_rqst *rqstp,
  }

  /* Perform upcall, or find upcall result: */
- rsip = rsi_lookup(&rsikey);
+ rsip = rsi_lookup(sn->rsi_cache, &rsikey);
  rsi_free(&rsikey);
  if (!rsip)
   return SVC_CLOSE;
- if (cache_check(&rsi_cache, &rsip->h, &rqstp->rq_chandle) < 0)
+ if (cache_check(sn->rsi_cache, &rsip->h, &rqstp->rq_chandle) < 0)
   /* No upcall result: */
   return SVC_CLOSE;

  ret = SVC_CLOSE;
  /* Got an answer to the upcall; use it: */
- if (gss_write_init_verf(rqstp, rsip))
+ if (gss_write_init_verf(sn->rsc_cache, rqstp, rsip))
   goto out;
  if (resv->iov_len + 4 > PAGE_SIZE)
   goto out;
@@ -1055,7 +1052,7 @@ static int svcauth_gss_handle_init(struct svc_rqst *rqstp,

  ret = SVC_COMPLETE;
 out:
- cache_put(&rsip->h, &rsi_cache);
+ cache_put(&rsip->h, sn->rsi_cache);
  return ret;
 }

@@ -1079,6 +1076,7 @@ svcauth_gss_accept(struct svc_rqst *rqstp, __be32 *authp)
  __be32  *rpcstart;
  __be32  *reject_stat = resv->iov_base + resv->iov_len;
  int  ret;
+ struct sunrpc_net *sn = net_generic(rqstp->rq_xprt->xpt_net, sunrpc_net_id);

  dprintk("RPC:       svcauth_gss: argv->iov_len = %zd\n",
    argv->iov_len);
```

```
@@ -1129,7 +1127,7 @@ svcauth_gss_accept(struct svc_rqst *rqstp, __be32 *authp)
  case RPC_GSS_PROC_DESTROY:
   /* Look up the context, and check the verifier: */
   *authp = rpcsec_gsserr_credproblem;
-  rsci = gss_svc_searchbyctx(&gc->gc_ctx);
+  rsci = gss_svc_searchbyctx(sn->rsc_cache, &gc->gc_ctx);
   if (!rsci)
    goto auth_err;
   switch (gss_verify_header(rqstp, rsci, rpcstart, gc, authp)) {
@@ -1209,7 +1207,7 @@ drop:
  ret = SVC_DROP;
 out:
  if (rsci)
-  cache_put(&rsci->h, &rsc_cache);
+  cache_put(&rsci->h, sn->rsc_cache);
  return ret;
 }

@@ -1362,6 +1360,7 @@ svcauth_gss_release(struct svc_rqst *rqstp)
  struct rpc_gss_wire_cred *gc = &gsd->clcred;
  struct xdr_buf *resbuf = &rqstp->rq_res;
  int stat = -EINVAL;
+ struct sunrpc_net *sn = net_generic(rqstp->rq_xprt->xpt_net, sunrpc_net_id);

  if (gc->gc_proc != RPC_GSS_PROC_DATA)
   goto out;
@@ -1404,7 +1403,7 @@ out_err:
   put_group_info(rqstp->rq_cred.cr_group_info);
  rqstp->rq_cred.cr_group_info = NULL;
  if (gsd->rsci)
-  cache_put(&gsd->rsci->h, &rsc_cache);
+  cache_put(&gsd->rsci->h, sn->rsc_cache);
  gsd->rsci = NULL;

  return stat;
@@ -1429,30 +1428,96 @@ static struct auth_ops svcauthops_gss = {
  .set_client = svcauth_gss_set_client,
 };

+static int rsi_cache_create_net(struct net *net)
+{
+ struct sunrpc_net *sn = net_generic(net, sunrpc_net_id);
+ struct cache_detail *cd;
+ int err;
+
+ cd = cache_create_net(&rsi_cache, net);
+ if (IS_ERR(cd))
+  return PTR_ERR(cd);
```

```
+ err = cache_register_net(cd, net);
+ if (err) {
+  cache_destroy_net(cd, net);
+  return err;
+ }
+ sn->rsi_cache = cd;
+ return 0;
+}
+
+static void rsi_cache_destroy_net(struct net *net)
+{
+ struct sunrpc_net *sn = net_generic(net, sunrpc_net_id);
+ struct cache_detail *cd = sn->rsi_cache;
+
+ sn->rsi_cache = NULL;
+ cache_purge(cd);
+ cache_unregister_net(cd, net);
+ cache_destroy_net(cd, net);
+}
+
+static int rsc_cache_create_net(struct net *net)
+{
+ struct sunrpc_net *sn = net_generic(net, sunrpc_net_id);
+ struct cache_detail *cd;
+ int err;
+
+ cd = cache_create_net(&rsc_cache, net);
+ if (IS_ERR(cd))
+  return PTR_ERR(cd);
+ err = cache_register_net(cd, net);
+ if (err) {
+  cache_destroy_net(cd, net);
+  return err;
+ }
+ sn->rsc_cache = cd;
+ return 0;
+}
+
+static void rsc_cache_destroy_net(struct net *net)
+{
+ struct sunrpc_net *sn = net_generic(net, sunrpc_net_id);
+ struct cache_detail *cd = sn->rsc_cache;
+
+ sn->rsc_cache = NULL;
+ cache_purge(cd);
+ cache_unregister_net(cd, net);
+ cache_destroy_net(cd, net);
+}
```

```
+
 int
-gss_svc_init(void)
+gss_svc_init_net(struct net *net)
 {
- int rv = svc_auth_register(RPC_AUTH_GSS, &svcauthops_gss);
+ int rv;
+
+ rv = rsc_cache_create_net(net);
  if (rv)
   return rv;
- rv = cache_register(&rsc_cache);
+ rv = rsi_cache_create_net(net);
  if (rv)
   goto out1;
- rv = cache_register(&rsi_cache);
- if (rv)
-  goto out2;
  return 0;
-out2:
- cache_unregister(&rsc_cache);
 out1:
- svc_auth_unregister(RPC_AUTH_GSS);
+ rsc_cache_destroy_net(net);
  return rv;
 }

 void
+gss_svc_shutdown_net(struct net *net)
+{
+ rsi_cache_destroy_net(net);
+ rsc_cache_destroy_net(net);
+}
+
+int
+gss_svc_init(void)
+{
+ return svc_auth_register(RPC_AUTH_GSS, &svcauthops_gss);
+}
+
+void
 gss_svc_shutdown(void)
 {
- cache_unregister(&rsc_cache);
- cache_unregister(&rsi_cache);
  svc_auth_unregister(RPC_AUTH_GSS);
 }
diff --git a/net/sunrpc/cache.c b/net/sunrpc/cache.c
```

```
index 9ef5926..a450b8a 100644
--- a/net/sunrpc/cache.c
+++ b/net/sunrpc/cache.c
@@ -1643,6 +1643,7 @@ int cache_register_net(struct cache_detail *cd, struct net *net)
   sunrpc_destroy_cache_detail(cd);
  return ret;
 }
+EXPORT_SYMBOL_GPL(cache_register_net);

 int cache_register(struct cache_detail *cd)
 {
@@ -1655,6 +1656,7 @@ void cache_unregister_net(struct cache_detail *cd, struct net *net)
  remove_cache_proc_entries(cd, net);
  sunrpc_destroy_cache_detail(cd);
 }
+EXPORT_SYMBOL_GPL(cache_unregister_net);

 void cache_unregister(struct cache_detail *cd)
 {
diff --git a/net/sunrpc/netns.h b/net/sunrpc/netns.h
index 309f88d..ce7bd44 100644
--- a/net/sunrpc/netns.h
+++ b/net/sunrpc/netns.h
@@ -10,6 +10,8 @@ struct sunrpc_net {
  struct proc_dir_entry *proc_net_rpc;
  struct cache_detail *ip_map_cache;
  struct cache_detail *unix_gid_cache;
+ struct cache_detail *rsc_cache;
+ struct cache_detail *rsi_cache;

  struct super_block *pipefs_sb;
  struct mutex pipefs_sb_lock;
diff --git a/net/sunrpc/sunrpc_syms.c b/net/sunrpc/sunrpc_syms.c
index 38a72a1..d16ac08 100644
--- a/net/sunrpc/sunrpc_syms.c
+++ b/net/sunrpc/sunrpc_syms.c
@@ -25,6 +25,7 @@
 #include "netns.h"

 int sunrpc_net_id;
+EXPORT_SYMBOL_GPL(sunrpc_net_id);

 extern int unix_gid_cache_create(struct net *net);
 extern int unix_gid_cache_destroy(struct net *net);
```