Open Computing ‘‘Hands-On’’ Tutorial: July 1994: Listings

Table 1. The masters and replicas for the NIS+ namespace used in this example, along with the clients in each domain.

```
Domain           Master  Replica Clients

zoo.com          human   dolphin human, icarus, sapiensh
mammals.zoo.com human   lion    lion
birds.zoo.com    icarus  eagle   eagle
```

Listing 1. Setting up the root server.

A. Set up the domain name, establish the `NIS_GROUP` environment variable (Bourne & Korn Shell), and add the `/usr/lib/nis` directory to your shell’s command search path.

```
# human:/> cat > /etc/defaultdomain
zoo.com.
[Control-D]
# human:/> domainname zoo.com.
# human:/> NIS_GROUP=admin.zoo.com.; export NIS_GROUP
# human:/> PATH=$PATH:/usr/lib/nis; export PATH
# human:/> []
```

B. Initialize the root server. The `-r` option is necessary only when setting up the root server. Then start up the NIS+ server daemon, `rpc.nisd`. If you are using YP compatibility, use the `-Y` flag. Once again, the `-r` option is used only on the root server.

```
# human:/> nisinit -r
# human:/> rpc.nisd -r -S 0
# human:/> []
```

C. Create the NIS+ tables. The `-Y` option sets the permissions of the created object to operate in YP compatibility.

```
# human:/> nissetup
# human:/> []
```

D. Create credentials for yourself (the root user on the machine human), in the default domain. Then create the administrative group admin in the zoo.com. domain.

```
# human:/> nisaddcred des zoo.com.
# human:/> nisgrpadm -c admin.zoo.com.
```

```
# human:/> []
```

E. Next, change the domain objects' permissions to allow members of the objects' group to read, modify, create and delete from the object. Then add the machine to the administrative group.

```
# human:/> nischmod g+rmcd zoo.com.
# human:/> nisgrpadm -a admin.zoo.com human.zoo.com.
# human:/> []
```

F. Update the objects created so far with the public and private keys created for yourself, start the caching daemon for NIS+, and kill and restart the `rpc.nisd`.

```
# human:/> nisupdkeys zoo.com.
# human:/> nisupdkeys org_dir.zoo.com.
# human:/> nisupdkeys groups_dir.zoo.com.
# human:/> nis_cachemgr
# human:/> ps -ef | grep nisd
# human:/> kill -9
# human:/> rpc.nisd -r -S 2
# human:/> []
```

Listing 2. Add information to the NIS+ tables.

A. The `-f` option indicates a source file in the current directory; the `-t` option indicates the table in the `org_dir` directory of the current domain is to be loaded; the name at the end of the command indicates that a table with the structure of *`name`* is being loaded.

```
# human:/etc> nisaddent -f rpc -t rpc.org_dir rpc
# human:/etc> nisaddent -f group -t group.org_dir group
# human:/etc> nisaddent -f passwd -t passwd.org_dir passwd
  ...
```

B. Add the auto_master and auto_home tables with the same command.

```
# human:/etc> nisaddent -f auto_master -t auto_master.org_dir  key-value
# human:/etc> nisaddent -f auto_home  -t auto_home.org_dir  key-value
# human:/etc> []
```

Listing 3. Create credentials for user and clients. Adding the domain name at the end of the command is ‘‘good housekeeping’’ practice.

A. The `nisaddcred` utility creates a credential that referes to a passwd entry:

```
# human:/etc> nisaddcred -p 1003 -P sapiensh.zoo.com. local zoo.com.
# human:/etc> nisaddcred -p unix.1003@zoo.com -P sapiensh.zoo.com. des zoo.com.
# human:/etc> []
```

B. Adding a user to the administrative group admin.zoo.com:

```
# human:/> nisgrpadm -a admin.zoo.com. sapiensh.zoo.com.
# human:/ []
```

C. Creating credentials for client machines:

```
# human:/> nisaddcred -p unix.dolphin@zoo.com -P dolphin.zoo.com.  des zoo.com.
# human:/> nisaddcred -p unix.icarus@zoo.com -P icarus.zoo.com.  des zoo.com.
# human:/ []
```

Listing 4. There are three ways to initialize a client, of which the ''cold start'' method is the most secure.

A. Initialize a client machine in NIS+ using the ''cold start'' method, and killing and restarting the keyserv daemon.

```
# icarus:/tmp> nisinit -c -C NIS_COLD_START
# icarus:/tmp> ps -ef | grep keyserv
root   432   408  1 21:33:54  ?    0:03 keyserv
# icarus:/tmp> kill -9 62
# icarus:/tmp> keyserv
# icarus:/tmp> []
```

B. Explicitly log in in with secure RPC password and then reboot the system by going to run-level 6:

```
# icarus:/tmp> keylogin -r
# icarus:/tmp> init 6
  ...
```

Listing 5. Setup a subdomain for mammals.zoo.com.

A. First, establish NIS_GROUP, then add the subdomain and setup the tables.

```
# human:/> NIS_GROUP=admin.mammals.zoo.com.; export NIS_GROUP
# human:/> nismkdir -m human mammals.zoo.com.
# human:/> nissetup mammals.zoo.com.
# human:/> []
```

B. Create the administrative group for the mammals sub-domain, and use nischmod to change the permissions on the sub-domain object to allow group members to read, modify, create and delete information.

```
# human:/> nisgrpadm -c admin.mammals.zoo.com.
# human:/> nischmod g+rmcd mammals.zoo.com.
# human:/> []
```

Listing 6. Create replica servers, dolphin, lion, and eagle for the

root domain, mammals sub-domain and the birds sub-domain respectively. Then ‘‘ping’’ them to send the object information from the master server.

```
# human:/> nismkdir -s dolphin zoo.com.
# human:/> nismkdir -s lion mammals.zoo.com.
# human:/> nisping zoo.com.
# human:/> nisping mammals.zoo.com.
# human:/> rlogin icarus
Password:
# icarus:/> nismkdir -s eagle birds.zoo.com.
# icarus:/> nisping birds.zoo.com.
# icarus:/ []
```

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Last Modified: Thursday, 30-Nov-95 16:53:14 PST