

NIS (or YP)

Network Information System
(used to be called Yellow Pages)

Distribute information to a local group of machines
One master server with files, changes the files there, push the changes to slave servers.

Slave servers: often one or two per subnet. Get information from master server.

Clients: Call any server and ask.

Easier than changing the same file in several dozen machines

The data from a file is stored in a database format (dbm) and is map.

Information usually includes the following important files: password, group, hosts, mail aliases, netgroups and also the following (rarely used files): networks, services, rpc, protocols

Machines are organized into groups called domains.
Machines in a domain must be trusting and are usually centrally administered.

YP Domains and Clients

The group of machines is given a name, this is called the nis domain name (that is different from your IP domain name)

`/etc/defaultdomain`: contains this name

The command `nisdomainname` is used to examine or set the domain name.

At boot time the command:

```
nisdomainname 'cat /etc/defaultdomain'
```

sets the domain name from the file.

A yp client finds a server in its domain and asks questions.

Setting up a YP client (NIS)

- 1) edit (create) `/etc/defaultdomain`,
- 2) `chmod a+x /etc/rc.d/rc.yp`
uncomment the lines about `ypbind`
uncomment other if using additional yp services
- 3) make sure `/var/yp` is a directory
- 4) If your yp server is not on the same cable, edit `/etc/yp.conf` to have the server's name or number. If it has the name you must either have the name in `/etc/hosts` or have DNS running (you have got to find out the number).
- 5) Set up the `/etc/nsswitch.conf` and other files to use nis.
- 6) Either reboot or start by hand

Starting by hand (especially for testing):

Use the following commands: (from `rc.yp`)

```
nisdomainname your NIS domain name  
/usr/sbin/ypbind
```

NIS file formats

`/etc/nsswitch.conf` defines the lookup order
It is re-read everytime a lookup is done.

Example:

```
passwd: files nis
hosts:  dns nis files
aliases: nis dbm
```

For each item list what is used (in order). Entries for the files, for nis, for dns (hosts only) nisplus and local data bases.

+ format compatibility:

```
passwd: compat
group:  compat
```

In each of the files you may place a + where you want the NIS information included.

You can also use the netgroup format.

`/etc/yp.conf` – format allows several lines of

```
server host_name domain_name
```

Allows you to specify a ypserver.

Support for multiple domains.

Setting up a YP Master Server

- 1) Edit `defaultdomain`, and make sure `/var/yp` is a directory
- 2) `chmod rc.yp` and uncommenting the yp server lines, (protect with `if -e`) for `/var/yp/domainname`
- 3) Make sure you have real files for password, groups, netgroup, services, protocols.
Do not have the `+` entries (you have the real files, so using yp is circular).
- 3a) setup the domain name (by hand)
- 3b) as root run `ypinit -m`
(on Linux it is in `/usr/lib/yp`)

The databases are built and stored in the `/var/yp/domainname` directory.

- 4) Start `ypserv`

Setting up a YP Slave Server

Follow the steps above except use

`ypinit -s ip.name.of.master.server`

Name the master server for your domain.

NIS utilities

NIS used database (dbm) format.

A database is called a map
(e.g., password map).

ypwhich: what server am I talking to

ypset: use this server

ypcat: print what yp has in the named map

ypmatch: find a specified pattern in a named map

yppush: master server sends copies of the named map to
the slave servers

ypxfr: slave server gets the named map from the master
server

ypmake: rebuilds the named map from the corresponding
file

Netgroup

/etc/netgroup — form: name tuple list
(on one line, use back-slash as line continuation)

```
print4 (lab84,-,cecsnet) (lab86,-,cecsnet)
file1 (lynx,-,cecsnet) (panther,-,cecsnet)
combined print4 file1 (cougar,-,cecsnet)
```

Some programs/files allow netgroups:

print4 allows/denys something with 2 machines

Format is (machine name, user name, yp domain name)

The - indicates all users.

Typical tactic: use netgroups on all printers, control access from your yp server by changing the tuple lists.

Usage varies by application:

```
@print4      print4      +@print4
```