

Objective 1 **Manage Resources on the Network**

To manage resources on the network, you need to understand the following:

- [Network Information Service \(NIS\)](#)

Network Information Service (NIS)

When multiple Linux/UNIX systems in a network are configured to access common resources, it becomes important that all user and group identities are the same for all computers in that network.

In other words, the network should be transparent to the user. No matter which computer a user logs in to, that user should always see exactly the same environment.

You can make sure this happens by using Network Information Service (NIS) and Network File System (NFS) services.

To configure NIS for your network, you need to know the following:

- [Network Information Service Basics](#)
- [NIS Domain Components](#)
- [NIS Configuration Overview](#)
- [Configure an NIS Master Server with YaST](#)
- [Configure an NIS Master Server Manually](#)
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Network Information Service Basics

NIS is a database system that allows the centralized administration of configuration files. NIS enables centralized user management and printer administration as well.

In addition, NIS makes it easier to administer large networks by distributing configuration files to individual workstations. NIS is usually installed with the network file system (NFS)—the user's configuration files and home directories are administered centrally on one or more servers.

Linux administrators originally referred to NIS as “YP,” which simply stands for the idea of the network's “yellow pages.” The names of specific components of NIS still use the YP (such as ypbind, ypsserv, and yppasswd).

The NIS server stores the files to distribute over the whole network in maps. The files are stored in a special database format with the corresponding keys.

For example, the file `/etc/passwd` can be converted to a database using the UID or user name as the key. The respective database files are then called `passwd.byuid` or `passwd.byname`.

Other files that are often converted to map databases for distribution across a network include `/etc/passwd`, `/etc/shadow`, `/etc/group`, `/etc/hosts`, and `/etc/services`.

NIS Domain Components

In an NIS domain, there are three types of computers:

- **Master server.** All important configuration files distributed across the network are stored on the master server. These configuration files are converted to NIS maps (files in DBM format) and distributed to slave servers.

Daemons run on the master server and are responsible for processing the NIS clients' requests. The NIS server program is `ypserv`.

- **Slave servers.** Slave servers help the master server process requests. For example, they can process NIS requests if the master server cannot be accessed.

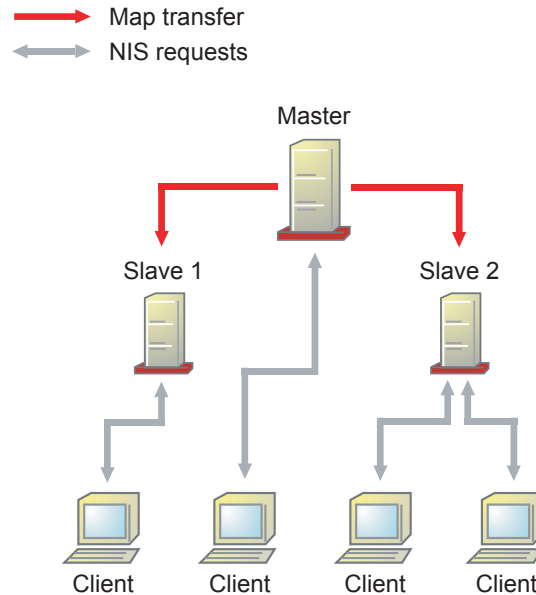
After the maps on the master server have been updated, they are automatically passed to the slave servers. Either a master server or a slave server can respond to requests. The first response that arrives is used.

- **NIS clients.** NIS clients retrieve the configuration files (stored as maps) from the NIS server. You can configure a client to completely ignore local configuration files and to use only the NIS maps.

You can also configure a client to use both local configuration files and NIS maps in any order. This is done in the file `/etc/nsswitch.conf`. The NIS client program is `ybind`.

The NIS servers, together with their clients, form an NIS domain, that works as illustrated in the following:

Figure 11-1



You can configure these components with YaST or manually.

NIS Configuration Overview

The name of the NIS domain is stored in the file `/etc/defaultdomain` and the server to address is written to the file `/etc/yp.conf`.

If several NIS servers are in the domain (such as a master server and a number of slave servers), it makes sense to enter the slave servers before the master server in `yp.conf`.

On a slave server, the local NIS server should be addressed first, then any other existing slave servers, and finally the master server.

The following is an example of addressing the servers:

```
da10:~ # cat /etc/yp.conf
ypserver 127.0.0.1
ypserver 10.0.0.2
ypserver 10.0.0.254
```

On the slave server, first the local host is queried (127.0.0.1). If this is not available, another slave server (10.0.0.2) is queried. If this does not respond, the master server (10.0.0.254) is contacted.

The NIS client must be configured to use the NIS maps instead of or in addition to the local configuration files. The configuration file you need to modify is `/etc/nsswitch.conf`.

The order of queries is also determined by this configuration file. This file contains an entry for almost every configuration file that can be administered across the network.

The following is an example of setting the order of queries:

```
passwd:      compat
group:       compat

hosts:       files nis dns
services:    files
protocols:   files
```

In this example, the entry for name resolution (**hosts: files nis dns**) means that first the local file `/etc/hosts` is queried, then the corresponding NIS map, and finally the DNS server.

The entry **compat** for `passwd` and `group` means that a compatibility mode should be used for programs linked to older versions of the GNU C Library.

To achieve this, an entry is added automatically by YaST as a last entry in the files `/etc/passwd` and `/etc/group`.

This entry specifies that the contents of the NIS maps should be regarded as an extension of the files and should be evaluated after the local files.

If only the NIS maps should be used, you need to modify the entries for `passwd` and `shadow` in the file `/etc/nsswitch.conf` as follows:

```
passwd: nis
group: nis
```



For more information about `nsswitch.conf`, enter **`man nsswitch.conf`**.

Configure an NIS Master Server with YaST

To use YaST to configure your host as an NIS server, do the following:

1. From the KDE desktop, start the YaST NIS Server module by doing one of the following:
 - Select the **YaST** icon, enter the root password ***novell***, and select **OK**; then select **Network Services > NIS Server**.
 - or*
 - Open a terminal window and enter **`sux -`** and the root password ***novell***; then enter **`yast2 nis_server`**.

The following dialog appears:

Figure 11-2



This initial configuration dialog lets you create a master NIS server or a slave NIS server.

2. Do one of the following:

- ❑ If no NIS server exists in your network, select **Create NIS Master Server**.
- ❑ If you already have an NIS master server in the network, you can add an NIS slave server by selecting **Create NIS Slave Server**.

For example, you might want to create a slave server if you want to configure a new subnetwork.

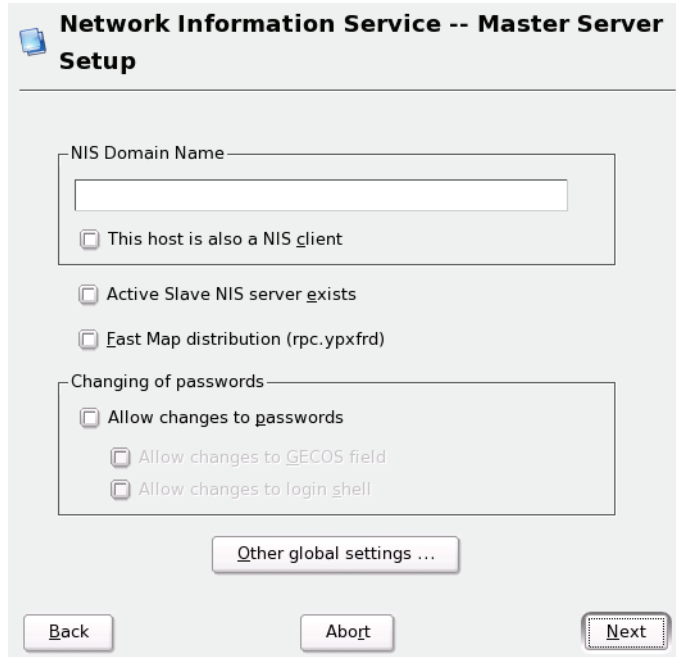
- ❑ If you want to quit the NIS server setup, select **Do Nothing and Leave Set Up**.

3. Create an NIS master server by doing the following:

- a. Select **Create NIS Master Server**.

The following dialog appears:

Figure 11-3



- b. Enter the NIS server *domain name* in the **NIS Domain Name** field.
- c. Select from the following options:
- ❑ **This Host Is Also a NIS Client**. Select this option to indicate that the host should also be an NIS client, enabling users to log in and access data from the NIS server.
 - ❑ **Active Slave NIS Server Exists**. Select this option to configure additional NIS servers (slave servers) in your network later.

