

# Configuring NIS [12]

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## 12.1 Related NIS documentation

The following documentation contains information covered in this chapter:

- *UNICOS Networking Facilities Administrator's Guide*, Cray Research publication SG-2304
- *UNICOS Administrator Commands Reference Manual*, Cray Research publication SR-2022: `netstart(8)`, `udbgen(8)`, `ypbind(8)`, `ypinit(8)`, `yppasswdd(8)`, `yppush(8)`, `ypserv(8)`, `ypstart(8)`, and `ypxfr(8)` man pages
- *UNICOS User Commands Reference Manual*, Cray Research publication SR-2011: `domainname(1)`, `udbsee(1)`, `yppasswd(1)`, and `ypwhich(1)` man pages

## 12.2 What is NIS?

The Network Information Service (NIS) is a network service that allows information such as passwords and group IDs for an entire network to be held in one database. (NIS was formerly known as Yellow Pages.)

Cray Research also supports a new naming service called Network Information Service Plus (NIS+), developed by SunSoft, Inc., a Sun Microsystems company. NIS+ is one of a suite of technologies that make up Open Network Computing Plus (ONC+), a SunSoft product and technology concept. NIS+ is separately licensed (as part of ONC+). The NIS product continues to be provided with the UNICOS release under the UNICOS license. Only the new NIS+ product requires the separate ONC+ license. For more information on NIS+, see the *UNICOS Networking Facilities Administrator's Guide*, Cray Research publication SG-2304.

Implemented with the Remote Procedure Call (RPC) and eXternal Data Representation (XDR) library routines, UNICOS NIS has the following features:

- Look-up service: UNICOS NIS maintains a set of databases that can be queried through the use of pointers, or "keys." Programs can request the value associated with a particular key, or all of the keys, in a database.

- Network service: Programs do not have to know the location of data or how it is stored. Instead, they use a network protocol to communicate with a database server that contains the information.
- Distributed service: Databases are fully replicated on several machines, known as "NIS servers." The servers propagate updated databases among themselves, ensuring consistency.

The UNICOS NIS environment includes at least one Cray Research system and one or more other hosts that also run NIS.

NIS databases contain maps; a *map* contains information that is usually found in an ASCII configuration file. Each map contains a set of keys and associated values. For example, the `passwd` map contains user names (the keys) and their associated `/etc/passwd` file entries (the values). The NIS maps are stored in `dbm` format. The `makedbm` command converts an ASCII file into a `dbm` format file that NIS can use. Usually, you do not have to worry about `dbm` format or the `makedbm` command. To generate the maps, you will use the `makefile` in the `/etc/yp` directory. For further information on the internal map format, see the `dbm(3)` and `makedbm(8)` man pages.

Cray Research supports the following maps on systems running the UNICOS operating system:

<u>Map</u>	<u>Description</u>
<code>group</code>	Performs the function of the <code>/etc/group</code> file: mapping group names to group IDs.
<code>netgroup</code>	Defines networkwide groups used for permission checking when doing remote mounts, remote logins, and remote shells.
<code>passwd</code>	Performs a few selected functions of the UDB on UNICOS systems; namely, password, home directory, and shell lookup.
<code>publickey</code>	Used for secure RPC, the <code>publickey</code> map contains public key/private key pairs for users and hosts on the network. For more information about running secure RPC, see the NIS chapter in the <i>UNICOS Networking Facilities Administrator's Guide</i> , Cray Research publication SG-2304.

An important distinction to make is that a Cray Research system running the UNICOS system can **serve** other NIS maps for its domain; however, the Cray Research system (as a client) **consults** only the preceding maps. For more information about supported maps, see the NIS chapter in the *UNICOS Networking Facilities Administrator's Guide*, Cray Research publication SG-2304.

An *NIS domain* is a specified set of NIS maps. The set of maps for a given domain is stored in a directory named after the domain. To assign hosts to a particular domain, use the `domainname` command.

Servers provide resources; clients use them. There are two types of NIS servers: master servers and slave servers. The *master server* contains the NIS maps. You can change NIS maps only on the master server. A *slave server* contains copies of the NIS maps that it obtains from the master server for its domain.

*Clients* do not contain their own copies of the NIS maps. Instead, they request information from the servers in their domain.

**Note:** You should configure your CRAY J90 system as an NIS slave server.

This section contains procedures for the following:

- Using the menu system to configure your CRAY J90 system as an NIS slave server
- Configuring your CRAY J90 system as an NIS slave server without using the menu system
- Configuring user accounts to use NIS

UNICOS NIS differs from the NIS facility used on other systems based on the UNIX system. Administration of an NIS domain that includes a Cray Research system is different from administration of an NIS domain that does not. For example, UNICOS NIS does not support the broadcast feature. If you are unfamiliar with NIS, you should first read the NIS documentation for your other systems. After you have familiarized yourself with the general NIS mechanism, read the *UNICOS Networking Facilities Administrator's Guide*, Cray Research publication SG-2304, to familiarize yourself with UNICOS NIS before you configure NIS on your CRAY J90 system.

**Procedure 37: Using the menu system to configure your CRAY J90 system as an NIS slave server**

**Note:** This procedure assumes that another host on the network is already configured as an NIS master server and that your CRAY J90 system can communicate with that host.

To configure NIS, the `portmap` daemon must be running (that is, it must be set to `YES` in the `/etc/config/daemons` file); `portmap` is part of the TCP daemons group. For information about starting system daemons, see Chapter 4, page 45. If you have an ONC+ license, start the `rpcbind` daemon command by executing the `/etc/rpcstart(8)` or `/etc/rpcbind` command. This daemon provides support for universal addressing. For more information on the `rpcbind` daemon, see the *Remote Procedure Call (RPC) Reference Manual*, Cray Research publication SR-2089, and the `rpcbind(8)` and `rpcstart(8)` man pages.

Before you configure NIS on your CRAY J90 system, read the cautionary note and other important information on pages Section 12.2, page 289.

The following steps use the menu system to configure your CRAY J90 system as an NIS slave server:

1. Enable the menu system to configure NIS. To give the menu system permission to change the configuration for NIS, ensure that the `NIS configuration` option is set to `YES` in the `Configure System->Configurator Automation Options` menu. Also, ensure that the `Configure System->Major Software Configuration` menu has the `Network Information Service (NIS)` option set to on; if you must change the `Major Software Configuration` menu, you must rebuild your kernel.

2. Assign your CRAY J90 system to an NIS domain.

Select the `Configure System->Network Configuration->NIS Configuration` menu. Enter the NIS domain name, and then activate the NIS configuration. A sample menu screen follows:

```
Configure System
->Network Configuration
    ->NIS Configuration
```

## NIS Configuration

```
S-> NIS domain name
    Import the NIS configuration ...
    Activate the NIS configuration ...
```

3. Run the `/etc/yp/ypinit` script with the `-s` option to configure the CRAY J90 system as an NIS slave server. Include the host name of the NIS master for your domain on the command line, as follows:

```
# /etc/yp/ypinit -sNISmasterserver
```

Running `ypinit -s NIS_masterserver` causes a copy of the NIS maps to be transferred from the master to the slave server (your Cray Research system running the UNICOS system) and placed in the `/etc/yp/domainname` directory. Running this command also adds the slave server to the `ypservers` map for your domain.

**Note:** You must run `ypinit` only once, when you first install the host as a slave server. After that, you can perform map updates by using either the `yppush` command from the master server or the `ypxfr` command from the slave server.

4. Start the NIS daemons, `ypserv` and `ypbind`.

**Note:** The procedure for starting NIS daemons differs from the procedure for starting other system daemons.

An administrator (`root`) can start all daemons manually from the command line. To start the `ypbind` daemon, use the `-h` option, as follows:

```
# /etc/ypserv
# /etc/ypbind -h yourCRAY J90hostname
```

You may start the daemons manually when you first install NIS to verify that everything is working. After that, the daemons will be started automatically each time the system boots because when you activated the menu in step 1, your NIS domain name was written into the `/etc/config/ypdomain.txt` file. At system startup, the `/etc/ypstart` script accesses the `/etc/config/ypdomain.txt` file, automatically sets the NIS domain name, and then starts the `ypserv` and `ypbind` daemons.

You **must not** add the daemons to the `/etc/config/daemons` file. The `ypstart` script assumes that you are running the Cray Research system as an NIS slave server. Any other configuration will require you to modify the `ypstart` script.

5. Verify that the CRAY J90 system has bound to itself by using the `ypwhich` command. It is normal to see that the domain has not bound the first time you execute `ypwhich`; simply enter it a second time, as follows:

```
# ypwhich
Domain domainname not bound.
# ypwhich
yourCRAY J90system
```

### **Procedure 38: Configuring your CRAY J90 system as an NIS slave server without using the menu system**

**Note:** This procedure assumes that another host on the network is already configured as an NIS master server and that your CRAY J90 system can communicate with that host.

To configure NIS, the `portmap` daemon must be running (that is, it must be set to `YES` in the `/etc/config/daemons` file); `portmap` is part of the TCP daemons group. For information about starting system daemons, see Chapter 4, page 45.

Before you configure NIS on your CRAY J90 system, read the cautionary note and other important information on pages Section 12.2, page 289.

The following steps explain how to configure your CRAY J90 system as an NIS slave server without using the menu system:

1. Edit the `/etc/config/rcoptions` file and set the `RC_YP=` parameter to `YES`.
2. Assign your CRAY J90 system to an NIS domain.

To set the NIS domain, use the `domainname` command (*domainname* is the name of your NIS domain), as follows:

```
# domainnamedomainname
```

3. Run the `/etc/yp/ypinit` script with the `-s` option to configure the CRAY J90 system as an NIS slave server. Include the host name of the NIS master for your domain on the command line, as follows:

```
# /etc/yp/ypinit -s NISmasterserver
```

Running `ypinit -s NISmasterserver` transfers a copy of the NIS maps from the master to the slave server (your Cray Research system running the UNICOS system) and places it in the `/etc/yp/domainname` directory. Running this command also adds the slave server to the `ypservers` map for your domain.

**Note:** You must run `ypinit` only once, when you first install the host as a slave server. After that, you can perform map updates by using either the `yppush` command from the master server or the `ypxfr` command from the slave server.

4. Start the NIS daemons, `ypserv` and `ypbind`.

**Note:** The procedure for starting NIS daemons differs from the procedure for starting other system daemons.

An administrator (`root`) can start all daemons manually from the command line. To start the `ypbind` daemon, use the `-h` option, as follows:

```
# /etc/ypserv
# /etc/ypbind -h yourCRAY J90hostname
```

You may start the daemons manually when you first install NIS to verify that everything is working. After that, you should configure the daemons so that they are started automatically each time the system boots; see "To have NIS start automatically when you start UNICOS" at the end of this procedure.

5. Verify that the CRAY J90 system has bound to itself by using the `ypwhich` command. It is normal to see that the domain has not bound the first time you execute `ypwhich`; simply enter it a second time, as follows:

```
# ypwhich
Domain domainname not bound.
# ypwhich
yourCRAY J90system
```

**To have NIS start automatically when you start UNICOS**

To start NIS automatically when you start the UNICOS system, specify the NIS domain name by placing the name in the `/etc/config/ypdomain.txt` file, as follows:

```
# echo your_NIS_domain_name > /etc/config/ypdomain.txt
```

When you start the UNICOS system in the future, the `/etc/ypstart` script will access the `/etc/config/ypdomain.txt` file, set the NIS domain name automatically, and then start the `ypserv` and `ypbind` daemons. You **must not** add the daemons to the `/etc/config/daemons` file. The `ypstart` script assumes that you are running the Cray Research system as an NIS slave server. Any other configuration will require you to modify the `ypstart` script.

**Procedure 39: Configuring user accounts to use NIS**

**Note:** This procedure assumes that your CRAY J90 system has already been configured as an NIS slave server (see the preceding procedure).

You can configure NIS so that a user's password, home directory, and default shell are obtained from the NIS `passwd` map, rather than from the UNICOS user database (UDB).

1. Set the user account `permbits` to `yp` and the `passwd`, `dir`, and `shell` fields to null by using `udbgen`.

Example:

```
# /etc/udbgen -c "update:john:permbits:yp:passwd::dir::shell::"
```

2. Verify that the user database entry is correct, using the `udbsee` command.

Example:



```
# udbsee john
create :john: uid :10055:
      comment :John Stephen Smith:
      passwd  ::
      gids    :175:
      acids   :10055:
      dir     ::
      shell   ::
      root    :/:
      logline          :/dev/tty003:
      loghost         :asbestos:
      logtime         :748554978: # Mon Jan 10 14:56:18 1994
      resgrp          :175: # uid
      permbits        :yp:
      .
      .
      .
```

3. Inform NIS users that they must use the `yppasswd` command to change their password, rather than the `passwd` command. The `passwd` command also will inform NIS users to use `yppasswd` if they forget (see Chapter 7, page 171). The `yppasswd` command works only if you have started the `yppasswdd` daemon on the NIS master server machine.

