

Network Configuration Under Red Hat Linux 8.0

Easy Network Access

Setting up small local networks is a task that today's users are faced with daily. This article discusses the tools that Red Hat Linux 8.0 has to offer for this job. **BY THOMAS DRILLING**

The purchasing price of network equipment is negligible, and configuring a network should not be more difficult for home users than attaching a printer, for example.

In contrast to SuSE or Mandrake, Red Hat does not have a history of providing a centralized configuration tool. This is in line with the US market leader's product philosophy. For one thing the entry version of Red Hat Linux is still available as a free FTP download – and this goes a long way towards justifying Red Hat's lack of commitment to proprietary development; for another thing Red Hat argues that you should be able to configure a good Linux distribution with standard tools, so there should be no need to customize them just for Red Hat.

Red Hat relies on easy-to-use GTK tools for basic network configuration tasks, although the current 8.0 version has seen the demise of the *Red Hat Control Center*, which was available in version 7.3.

Control Center and Personal Desktop

The desktop icon *Start Here* provides a useful substitute for the former Control Center. Red Hat uses the icon to provide access to a series of tried and trusted configuration tools for critical system and network based tasks. In contrast to Red Hat version 7.3 they mainly comprise familiar tools that simply appear fresher and newer after re-working with Red Hat's new BlueCurve technology.

Some familiar tools have simply been given new names in the Start menu and, while we are on the subject, Red Hat's BlueCurve desktop unifies the appearance of KDE and Gnome applications. BlueCurve is more than just window dressing, Red Hat have introduced individual design elements to this desktop.

No matter whether you choose a KDE or Gnome desktop, you will find the same entries at the same positions in the Start menu. This prompted to refer to the menu generically as the Red Hat menu instead of specifying whether the version sports a KDE or Gnome logo on its Red Hat.

Assigning common names to various favorite tools may confuse some old Red Hat hands. Although many of the tools discussed in this article are still available via the Red Hat menu, some are missing. And as many tools have been renamed to fit the *redhat-xxx-config* template, even experts may struggle to find some of their favorite programs.

At least the *Start Here* icon is a worthy substitute for the former Control Center. Double clicking on the icon launches the *Nautilus* file manager with a hierarchical configuration window that contains four symbols: *Server Configuration*, *System Configuration*, *Preferences* and *Programs*. Clicking on *Server Configuration* provides access to the same configuration tools (and more) that are available in the Red Hat menu. The same principle applies to *System Configuration* and *Preferences*.

A Network Device

As regards network configuration, you should start by setting up the network



devices (such as network interface and ISDN cards), that is, if you did not already complete this step during the basic Red Hat Linux installation.

The configuration tool, *neat* (**N**etwork **A**dministration **T**ool for Red Hat Linux), is to be found under *System Configuration/Network* in the Red Hat menu.

Red Hat's *neat* can be used to set up all kinds of network devices (Ethernet and ISDN cards, modems, wireless and DSL devices). You need root privileges to configure the network settings.

neat is well organized. Network profiles are a new feature compared to previous Red Hat versions. The upper panel provides a number of buttons that allow you to create new profiles, and the lower panel contains four configuration tabs.

Let's look at a simple Ethernet connection first. We'll assume that the network interface card has been inserted correctly. Click on *Add* in the *Device* tab, choose *Ethernet Connection* in the list of device types and then click *Forward*. You can configure the network adapter in the tab that appears.

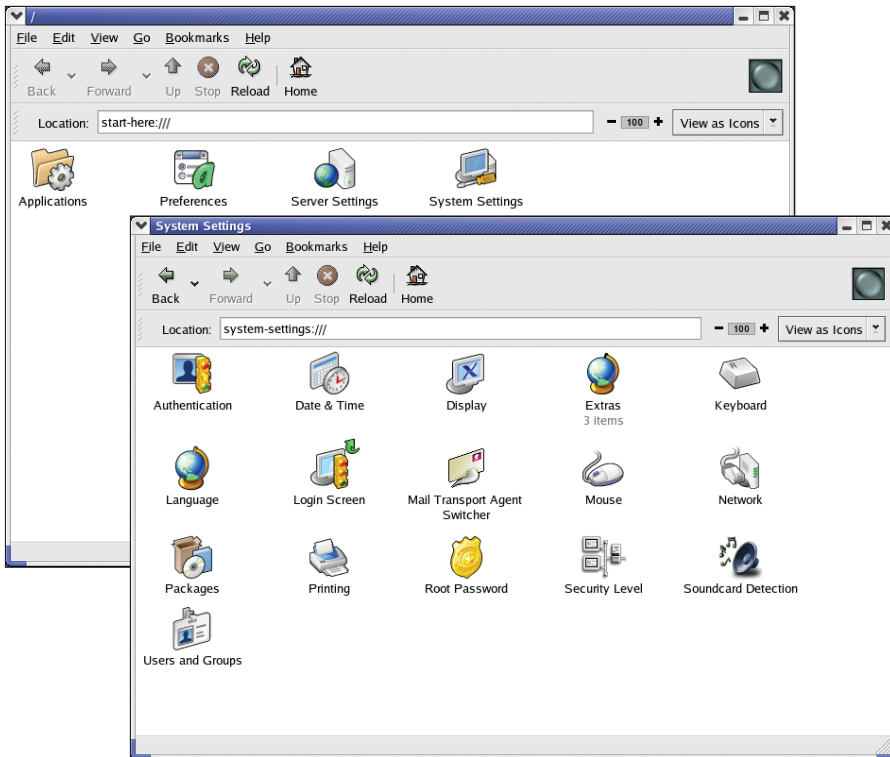


Figure 1: The "Start Here" desktop icon replaces the former Control Center. All of Red Hat's Linux critical configuration tools are pooled in a single Nautilus window

You can either choose automatic IP address assignment via DHCP in the upper part of tab, or assign a valid static IP address in the lower part. In this case you can optionally enter a default gateway address if you use another Ethernet Interface to route your Internet traffic to another host. After clicking on the *Forward* button, you can click on *Close* to finish configuring the network connection.

If required: Additional Network Devices

You can follow the same steps to add an *ipp* device for an ISDN connection. In the main menu, simply choose *ISDN Connection* as the connection type and select a service provider from the provider database in the next window. Call-by-Call providers are available in a tree structure below *UK/National*. When

you return to the main tab in *neat*, *Common*, shows you an overview of the network connections you have configured. You can click the *Edit* button here to edit a connection at a later stage.

The only difference between the *Edit* dialog and *Add* is the fact that two additional checkboxes are available. You can use them to specify that the device should be activated at boot time, or that all users should be permitted to enable or disable the device – this would make sense for Internet access via a DSL device, for example.

Hosts or DNS?

Besides the *Device* tab three additional tabs are available for configuring your network hardware, managing your hosts lists, and configuring DNS. The *Hosts* tab allows you to add individual hosts to the */etc/hosts* configuration file to provide static name resolution (without DNS).

If you do not want to configure DNS, or do not have a DNS server on your network, you can add the host addresses of all the hosts in your local subnet here and thus allow your users to work with **FQDN hostnames** instead of IP addresses. Red Hat Linux parses */etc/hosts* first before sending a request to a DNS server, although you can change this behavior by modifying */etc/resolv.conf*.

You can use the *Hardware* tab to check whether all your network devices have been correctly recognized. If not, you can click on *Add* to manually insert additional or unrecognized devices from a long list before configuring them in the *Device* tab. This is also the place to configure specific hardware parameters, such as IRQ levels or memory I/O addresses (for old ISA cards, for example).

The *DNS* tab allows you to modify the client DNS configuration by entering the addresses of up to three DNS servers. Additionally, the names and order for the search path can be entered in the *Search Domain* box. Domain names are added automatically if, for example, you want to access a machine via its hostname only, such as *server*. BlueCurve fans will also find an *Internet Configuration Druid* under *System Tools* in the Red Hat

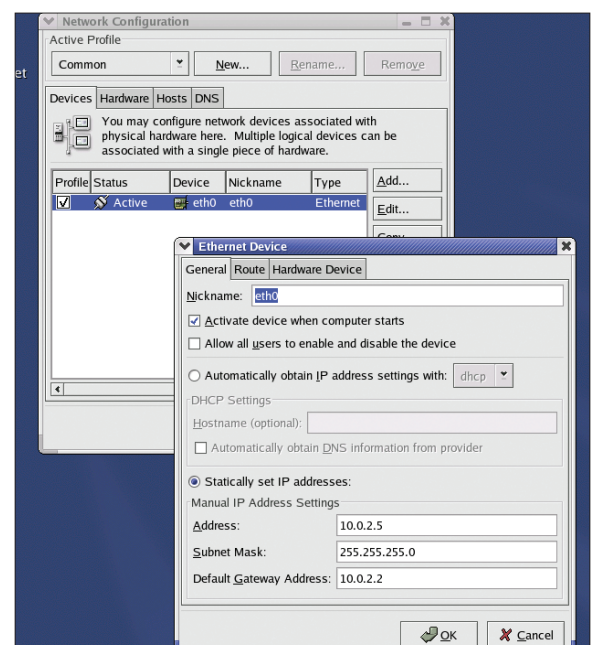


Figure 2: Neat is an extremely convenient network device configuration tool. If you use a second Ethernet adapter to communicate with a DSL modem, ensure that you use neat to create the card and assign a static IP address before commencing xDSL configuration

GLOSSARY

FQDN hostname: A "Fully Qualified Domain Name" is an Internet hostname of the www.linux-magazine.com format. Resolving the name to an IP address requires either a Domain Name Server or a host table entry in */etc/resolv.conf*.

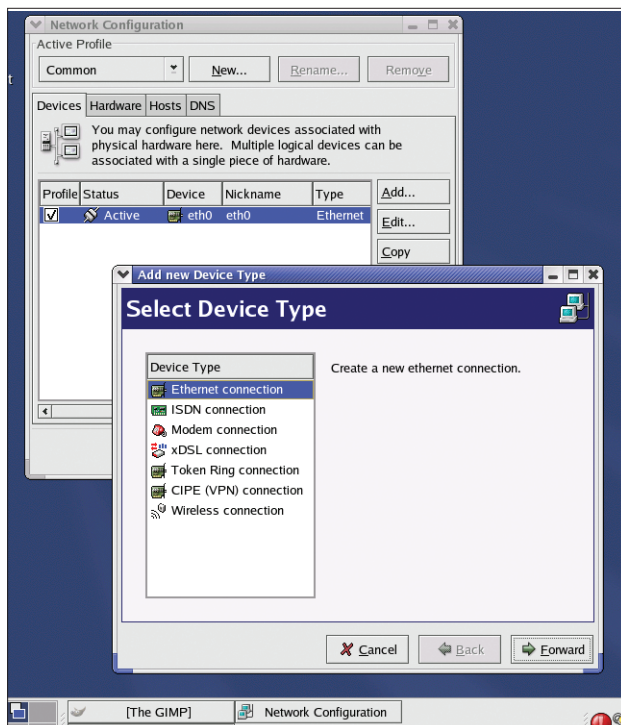


Figure 3: The device type druid is extremely powerful and can be used for all kinds of network devices

menu, but the druid simply points you to the *neat* tool.

Network Services

After ensuring that all your basic network devices are up and running, you can now start configuring individual network services. Red Hat also provides a bunch of tools in the new BlueCurve outfit for this purpose – they are hidden under *Server Settings* in the menu.

As already discussed, the same tools are available in *Start here/Server Configuration*. The available services will obviously depend on the Red Hat version you are using. You can use *System -Settings/Packages* to launch the Red Hat Package Manager and check the network and server tools and packages that are available to you, or have already been installed.

The new look *Package Management* tool fires up with an attractive menu selection *Add or Remove Packages*, and package grouping is clear cut. There are main groups, such as *Desktop*, *Applications*, *Server* etc. and each main group comprises a few subgroups – in the *Server* area, these are *Web Server*, *Mail Server*, *DNS Server* etc.

You can simply check the checkboxes to install the packages. The *Server*

tools we already discussed, such as *neat*, in the *redhat config network* package, you will discover additional tools like the *NFS server configuration tool* or *redhat-config-services*, a convenient *xinetd* configuration script.

NFS

The NFS configuration tool is interesting. Click on *Server Settings* in the Red Hat menu. If you are running more than one Linux machine on your local network, you can use NFS to share directories.

The GTK tool *NFS Server Configuration* in its new BlueCurve outfit is easy to use. Click on *Add* to add a new share, and type the full path of the server directory you want to share in *Directory*. You can use the *Browse* button to point and click to a directory. The *Hosts* text box allows you to specify the hosts allowed to share the directory. The list follows the typical

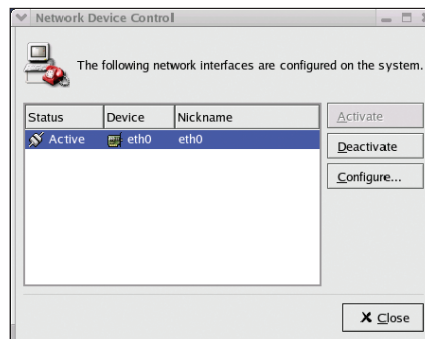


Figure 4: Network device control allows convenient activation and deactivation of network devices. This also applies to ISDN dial-up, for example

Configuration Tools subgroup is interesting for networked environments. A click on the *Details* hyperlink reveals the individual packages that this group comprises. Besides the network configuration

pattern, that is 192.168.0.34, 192.168.0.45, but you can use hostnames instead of IP addresses if name resolution has been configured correctly.

You can assign basic permissions, such as *Read Only* or *Read/Write* here by clicking on the radio buttons. More complex parameters, such as *no_root_squash* for example, need to be

entered manually in the */etc/exports* file (You can use this parameter to allow the local administrator, *root*, of a client machine to access a share with *root* permissions, this not permitted by default). The *no_root_squash* parameter is critical to security. The entry in the */etc/exports* configuration file might appear as follows:

```
/mnt/Data/ *(rw,no_root_squash)
192.168.0.102(rw,no_root_squash)
```

The *Apply* button re-parses the *exports* file and exports the newly defined share via NFS – of course this assumes that the NFS server is running, although this is default behavior for Red Hat Linux. Instead of the kernel based NFS server you might also install a userspace NFS

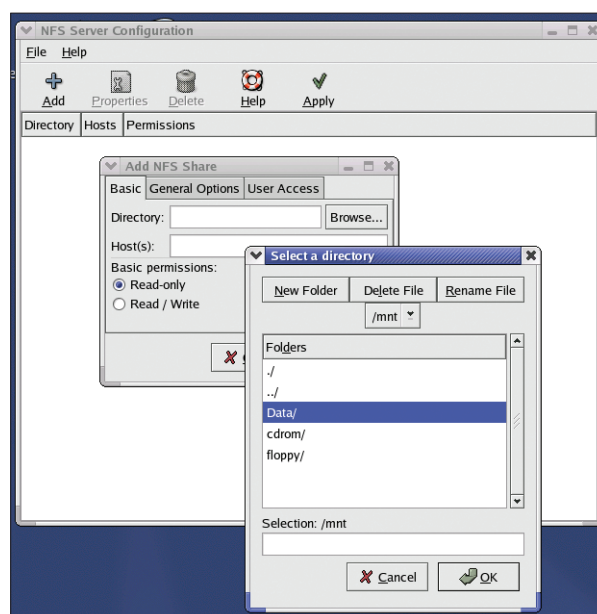


Figure 5: The NFS Server Configuration Tool allows you to set up NFS shares quickly, provided you keep to basic parameters

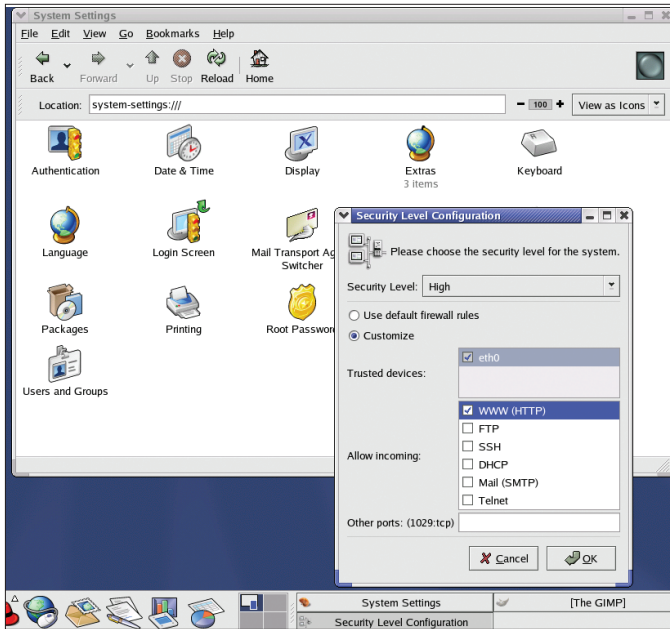


Figure 6: The Security Level Configuration tool allows basic firewall configuration

server, although this is seldom seen nowadays.

Miscellaneous

Clicking on *StartHere/ServerConfiguration/Services* provides access to a useful service and runlevel configuration tool. This GUI tool allows you to specify the services you want to activate at boot up. *Start*, *Stop* and *Restart* buttons are available for the services in the list. The list additionally shows the current runlevel to which your modifications will be applied.

You can use *Edit Runlevel* to change the settings for another runlevel. The Windows file and print server, Samba, is not launched automatically, for example. So to run a Red Hat based Samba server you will need to locate the SMB service, check the service, and then click the *Start* button to ensure that the SMB daemon is launched automatically (refer to the Samba articles in this issue for more details on Samba).

Clicking on *StartHere/SystemConfiguration* provides access to additional settings for network operations, such as tools for configuring *Security Levels*, *User Management* and the *Printing* tool, that allows you to set up a network printer.

Firewall

Clicking on *StartHere/SystemConfiguration/Security Level* launches the Security

Level Configuration tool. The *Security Level* pull-down at the top of the tool allows you to select a generic security level: *High*, *Medium* or *No Firewall*. However, the *Customize* check box is more interesting, as it allows you to define the services that will be available on a network interface, and the valid TCP ports for the interface.

This provides a

simple means of permitting external access to common services on your local network, such as a Web server, for example, despite running a firewall.

Network Printing

The printer configuration tool *Start Here/SystemConfiguration/Printing* (Red Hat Printer Config) is used to provide access to a network based printer

attached to a Windows or Linux machine on your local network. Clicking on *New* launches the first step in the Printer Wizard *Add a New Print Queue*. This tool is an old friend from Red Hat 7.3. The following backends are available for network printing: *Unix Printer* (only for LPD), *Windows Printer* (via Samba/SMB), *Novell Printer* (via NCP) and *HP Jetdirect*. Unfortunately, the tool does not support CUPS/IPP printing. The SMB protocol does provide browsing capabilities, so it should be possible to search for Windows printers in the domain or workgroup, however, the Red Hat Printer Wizard does not support this functionality. You should seriously consider using Red Hat CUPS instead. You need to know the IP address and printer name of Unix network printers that you intend to access using LPD.

Conclusion

Most Red Hat 8.0 tools are old friends from earlier versions, although some of them have been put into a new Blue-Curve outfit, or renamed – which is not particularly useful in some cases. The basic network configuration tool, *neat* boasts enhanced functionality, but most critical aspects of the network configuration are possible without having to modify configuration files. ■

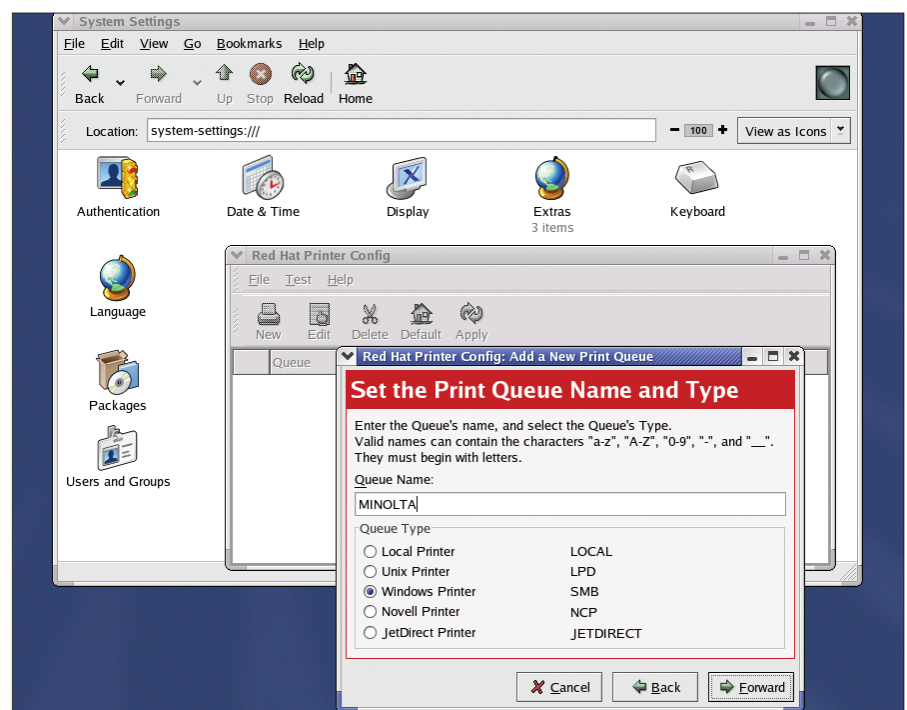


Figure 7: Red Hat's Printer Wizard provides quick configuration of network printers attached to Windows computers on the network. Unfortunately, CUPS or IPP printing is not supported