User Installation Guide – Spring 2001

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Version 0.9.8

Welcome to SmoothWall

Welcome to SmoothWall – we hope you are ready to start enjoying a new secure way of working online and also help us help you build better products for the future.

SmoothWall allows you to build a secure internet connection device with your connection method a choice of standard modem (internal Linux compatible) and external serial modem and ISDN devices, internal popular ISDN cards (autoprobing for popular manufacturers) or ADSL/Cable, or even dual ethernet configuration for companies and individuals who have an ethernet presentation. Utilising a web based engine for administration and providing services such as DHCP server, firewall logging, SSH client embedded for administration as well as graphical auditing and logging of internet packets, SmoothWall tries to deliver functionality.

Why Should I Use SmoothWall ?

SmoothWall is not just a project – it's something that has allowed a lot of people in 21 countries that we know of to take a redundant PC and turn it into a fully operational internet gateway. This is a major step forward for non technical people who would like to use the Internet or connection to a host or remote network with peace of mind. It's ideal for homeworkers or people in small to medium sized offices who want to use the Internet while knowing nobody is going to hack their network from the outside.

SmoothWall also gives you the same level of functionality with more features and easier setup and ownership than the leading hardware products aimed at the SoHo marketplace – and it's free. Free as in beer. You may have downloaded SmoothWall for free, you may have bought it from a reseller or from SmoothWall, or on the front cover CD of one of many magazines in Europe or North America, but effectively under the GNU General Public Licence (see www.gnu.org for more information) SmoothWall is free. You are welcome to take your SmoothWall CD and duplicate it and share it with people you want to tell about SmoothWall. The documentation and the additional benefits in the boxed set are for people who want to have that peace of mind and also want a book on SmoothWall. Many people find that downloading is just as cost effective.

Why is it so successful ?

 We never thought that within eight months that SmoothWall would cover th e globe with users as far apart as Australia, Saudi Arabia, North America, throughout Europe and Asia. SmoothWall has become a project that has generated a lot of interest in the Linux and Windows communities and captured the imagination of the development community. It really shows what is attainable using the Open Source software model and tools such as Sourceforge and the commitment of members of the community at large with ideas and suggestions has allowed us to grow SmoothWall to where it is today – with the advanced features it has today.

ADSL and the Alcatel USB device

You will find that SmoothWall supports ADSL connections in the ethernet / cable land. We don't support Alcatel's USB ADSL device because of the restrictions placed in the licence released by Alcatel. We are also a 2.2.18 IPSEC kernel derived distribution and we have no immediate plans to release a kernal 2.4 based product, especially not a 2.4.1 unstable development kernel, like the one that Alcatel have released their drivers compiled against. We have no plans to change this until Alcatel provide a more effective licencing strategy and a more sensible plan for users.

How can you help ?

Use our mailing lists that you'll find at our website – be selective in which ones you subscribe to – they generate a huge amount of traffic and the odd flame war between developers who've been up all night working on making SmoothWall a better tool for you to use.

Don't take the flame wars personally they're harmless – just a way of developers letting off steam. It's all part and parcel of the development mentality that sometimes evolves in fast moving Linux territory.

You can also keep us up to date with any user issues, hardware compatibility problems and also you can use the mailing list archives to find the answers to common questions before emailing them or asking a member of our friendly user community.

SmoothBot – Intelligent Reporting Agent

The first time you connect to the web with your SmoothWall gateway a simple run once bot runs, this script reports back information to SmoothWall HQ. This is in much the same fashion as a cookie would run on a website that you might visit. The bot records the following information only.

• The date you installed SmoothWall
• Your processor type, speed etc (this helps us gauge what platform e.g 486 upwards we should be aiming to support and what features we can and cannot add)
• Your connection method (e.g ISDN or Modem etc)
• Your harddrive size (enables us to gauge how big we can make SmoothWall etc)
• How much RAM your SmoothWall server has installed.
• The first two octets of your static or leased IP address from your ISP (helps us work out location of SmoothWall activity).

None of this information is sensitive and the information is stored to BS5750 requirements in our database. It enables us to exactly know how many SmoothWall servers there are so we can help by providing resource and also make sure that we can place FTP servers local to users etc.

We do NOT capture user information or any other data secretly or covertly – everything is totally up front and as we're opensource you'll even find the code to prove it – we would prefer you to voluntarily provide that using the registration form on the website using the resources we've provided.

We welcome you as a new user of SmoothWall – please visit our website at http://www.smoothwall.org and register as a new user – by doing so you help us gauge what you think of the product – and you can tell us information that we need to know to help you.

SmoothWall is as successful as you make it so help us to help you.

Do remember: SmoothWall will KILL your donor PC and delete everything on it during the build process – follow the instructions we've given you – read the mailing lists – SmoothWall is an effective tool and as effective as you make it.

Enjoy the experience and we'd love to extend a warm welcome into the SmoothWall community wherever on the planet you may be.

Best Wishes

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SmoothWall 0.9.8 Installation Guide

Contents

Introduction

This document refers to version 0.9.8 of SmoothWall. Further documentation, including any revisions or updates to this document, can be found on the SmoothWall web site – http://www.smoothwall.org/. Documentation found on the web site covers areas beyond basic installation of a SmoothWall system, such as a list of Frequently Asked Questions, a guide to networking, and a hardware compatibility guide, amongst others.

For the purposes of this document it is assumed that a donor PC consisting of supported hardware is available to install SmoothWall onto – please refer to the separate SmoothWall Supported Hardware document for further information.

This document details the installation of SmoothWall 0.9.8 from a bootable CD–ROM drive. Where this is not the case, any changes to the process of installation from the bootable CD–ROM installation are detailed separately.

Step 1. Installation from a bootable CD–ROM

Power on the donor PC, ensuring that the BIOS has been set to give priority to booting from the CD–ROM drive, rather than the hard disc.

Place the SmoothWall CD in the CD–ROM drive, and reboot the system to allow the SmoothWall installation routine to begin.

Step 2. Booting from the CD

As the PC boots up from the CD a welcome message is displayed with basic information about SmoothWall – please read this carefully, and refer to the SmoothWall web site for any last minute changes in documentation. Press the Enter key to begin the installation of SmoothWall.

Select the language for the installation, which defaults to English. Use the cursor or Tab keys to move the highlighted selection bar, and then use either the space bar or Enter key to confirm your selection and move to the next screen.

Step 3. Select installation media

The next screen you will be presented with asks for the location of the SmoothWall files. It is assumed that you will be installing from a CD–ROM, but it is also possible that the donor PC does not have a local CD–ROM drive. In this case, the SmoothWall files can be installed across a local network by copying the contents of the SmoothWall CD to a local system that is running a web server. In this case you will most likely have booted the system from a floppy disc – the initial boot and installation routine can be run from a floppy disc provided that the contents of the CD–ROM are made available from a web server across the local network. Details on installing SmoothWall from a source other than a CD are to be found in the appendix at the end of this document.

Step 4. Basic disc preparation

After this, the hard drive of the donor PC will be initialised and prepared for use with SmoothWall. The hard drive will be wiped clean of any existing data. The SmoothWall system refers to the first hard drive as "/dev/hda", which stands for "hard drive A device". If there were additional hard drives in the SmoothWall system they would be referred to as /dev/hdb, /dev/hdc, and so on. A message will be displayed to indicate the creation of the SmoothWall filesystem on the disc.

Step 5. Basic network configuration

The next stage is to configure the first network interface that the SmoothWall system will be using. This interface is the network card that is used to connect your SmoothWall system to the local network that is being protected form the Internet, and is referred to as the "Green" interface.

SmoothWall refers to the network interfaces that it monitors by means of colour – Green, Orange, and Red, indicating the level of trust that you have placed in information that reaches your private network from one of these interfaces.

The Green interface is the network interface card (NIC) that connects the SmoothWall system to your private network, and as such, is regarded as safe. This is often known as the "internal" or "trusted" network. Note that regardless of the SmoothWall configuration, this network interface will always be present, and as such SmoothWall automatically looks for the Green NIC as part of the installation routine.

The Orange interface is the network card that connect the SmoothWall system to the public part of your network – typically where you might place systems that the outside world is permitted to access, such as web or email servers. Note that the security built in to this release of SmoothWall does not allow access to systems on the Orange network from the network attached to the Green interface. This is often known as the "DMZ" or "demilitarized zone".

The Red interface is your connection to an unsafe network, such as the Internet. This could be a modem, an ISDN connection, a DSL/ADSL connection, a cable modem or a leased line. As such there are a number of possible configurations that SmoothWall supports, allowing for the vast majority of typical (and some specialist) networks. This is often known as the "external" or "untrusted" network.

The SmoothWall installation routine will automatically search for the details of your Green NIC and will try to determine the necessary driver to use with your network card. In the event that the automatic probing fails a backup of manually selecting the card exists, but this is unlikely to be the case. Note that with manual selection of the network card you may have to supply additional information to the installation routine – you will be prompted for this where necessary.

Select the "Autoprobe" option to allow SmoothWall to automatically detect the type of network card, or, if this subsequently fails to find an installed network card, use the "Select" option to manually choose support for a network card from a list. Once SmoothWall has detected the NIC for the Green interface you will be prompted for details of the address you wish to give the new SmoothWall machine.

At this point enter the IP address of your SmoothWall system. The network mask will be calculated automatically and should cause no problems unless your private network is using an unusual configuration. If this is the case, please consult your network administrator for details of what should be entered into this field. Please refer to the SmoothWall Networking Guide on the SmoothWall web site if any of the networking terms found in this document or the installation routine are unfamiliar to you.

Once you have configured the Green NIC successfully the remainder of the SmoothWall system will be installed and the CD–ROM ejected in preparation for rebooting the system and making the SmoothWall system live.

After this, the main SmoothWall setup will commence.

The first piece of basic network configuration that you will be prompted for is the hostname of the SmoothWall system itself.
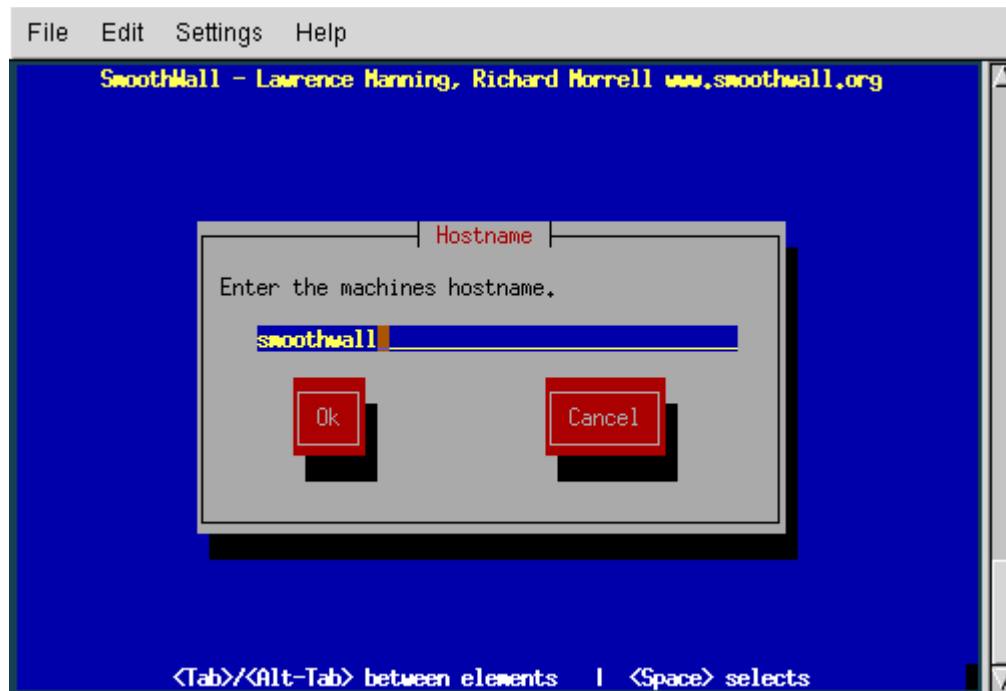
Figure 1 – Setting the hostname of the SmoothWall system.

The next stage is to configure ISDN, if you wish to utilse an internal ISDN card in your system.

Step 6. ISDN network configuration

After the Hostname configuration is complete, the next stage is to configure any ISDN connection that the SmoothWall system has. This ISDN connection will be on the Red interface only – the Green interface is by definition a NIC, and if an Orange interface is present this too will be a NIC.
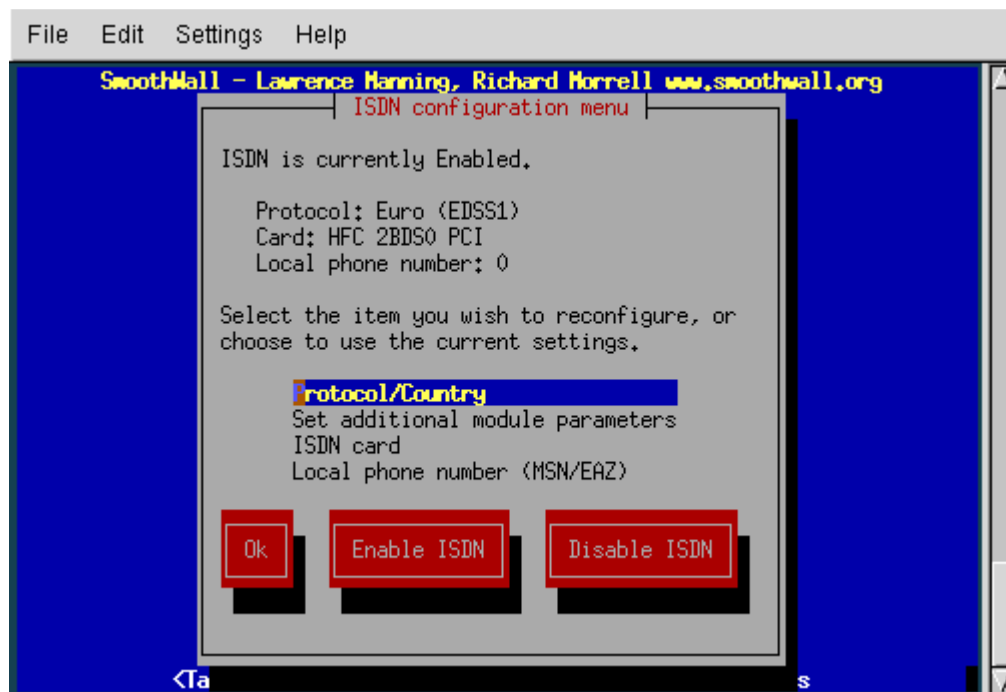

Figure 2 – Main ISDN configuration menu

At this menu you can enable or disable ISDN, select the ISDN card that is to be used, and configure a number of settings for the ISDN connection.

Begin by selecting a card – choose the "ISDN card" menu option. This will lead to a screen that allows the selection of an ISDN card. The default selection is such that SmoothWall will attempt to automatically detect the ISDN card that is fitted, but if it is not possible to automatically determine the type of card, a list will be presented so that you can choose your card from it.
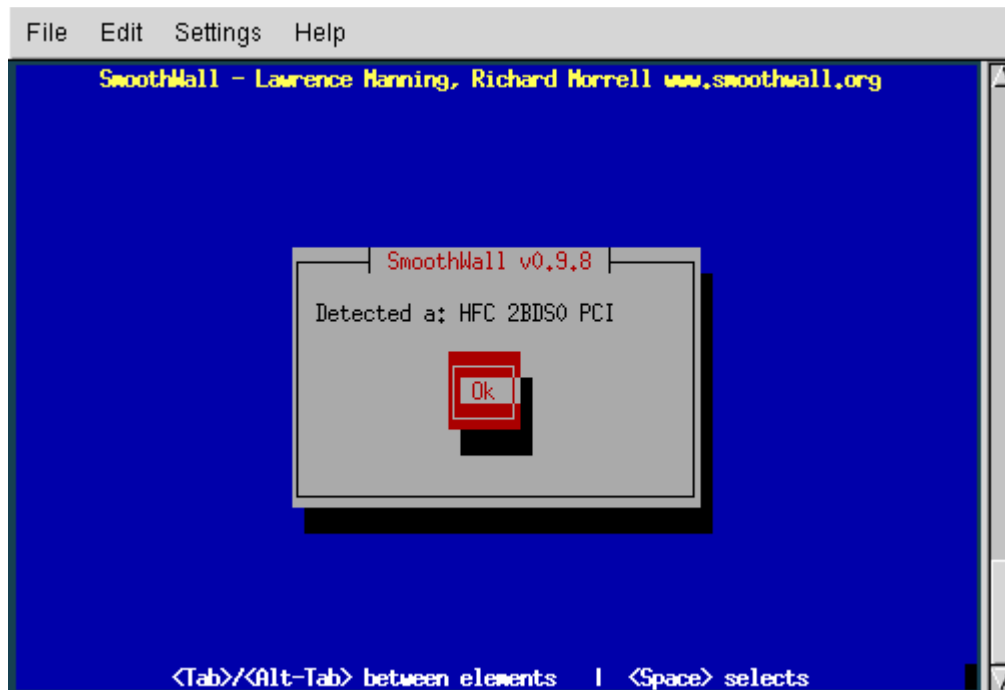
Figure 3 – Detection of ISDN card

Figure 4 – Manual selection of IDSN card

In the event of having to manually select an ISDN card you may also have to set a number of configuration parameters. This is especially true in the case of older ISA based cards. Select the

"Set additional module parameters" option from the main ISDN configuration menu if this is the case.

Figure 5 – Setting additional ISDN module parameters

Once the ISDN hardware has been successfully detected and configured the next steps in ISDN configuration are to set the ISDN protocol and country information and the local ISDN telephone number. These are set by the "Protocol/Country" and "Local phone number" options on the main ISDN configuration menu respectively. This information should be found with your ISDN card documentation and/or details of your connection.
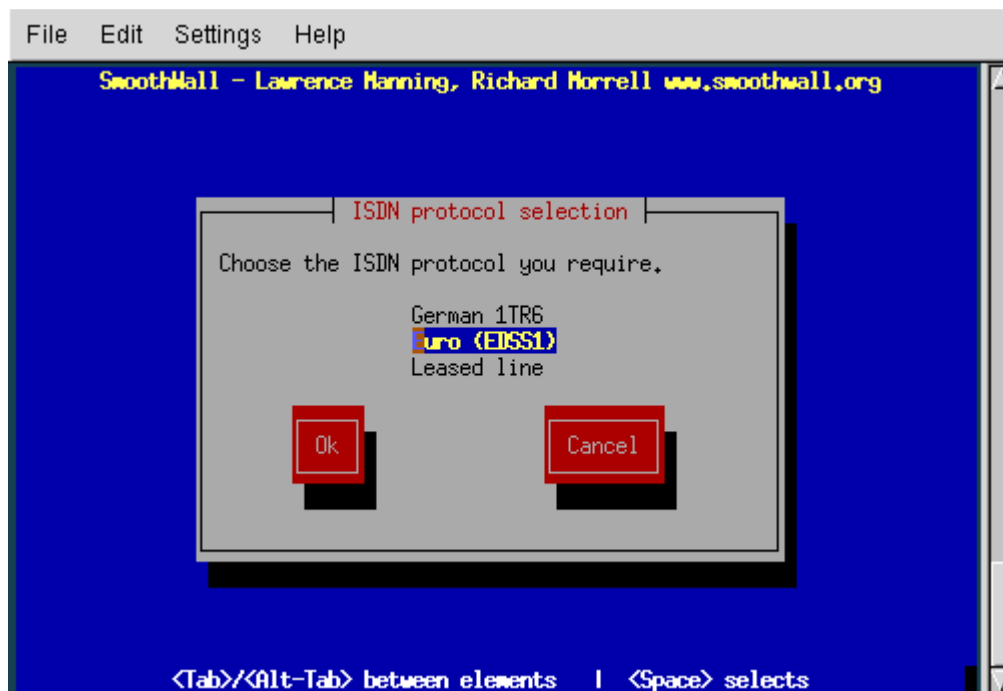
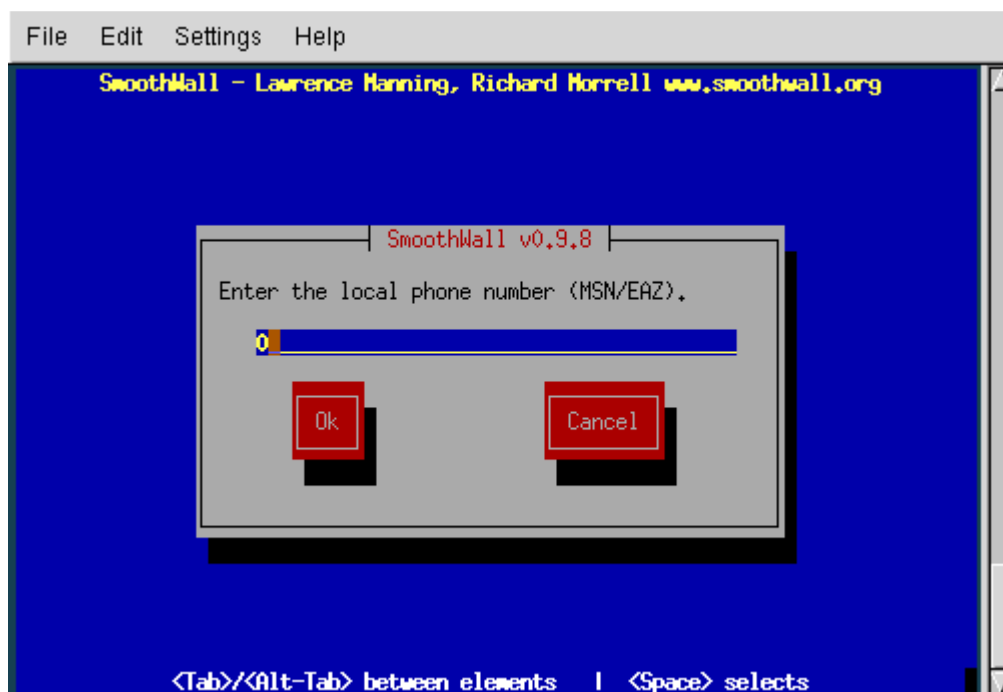*Figure 6 – Setting IDSN protocol*

Figure 7 – Setting local ISDN telephone number

Once all the details of the ISDN card have been configured you can enable the ISDN connection. Select the "Enable ISDN" button from the main ISDN configuration menu screen to finish the installation of SmoothWall.

Step 7. Ethernet network configuration

SmoothWall supports a number of different network configuration options to allow for the vast majority of protected networks. These are listed below along with the most common use for each configuration type:

1 – Green NIC plus Red Modem/ISDN

Used for protecting a private network of machines behind a dial–up connection to the Internet. This is the default network configuration.

2 – Green NIC plus Orange NIC plus Red Modem/ISDN

Used for protecting a private network of machines behind a dial–up connection to the Internet, as well as allowing access to a public network of machines.

3 – Green NIC plus Red NIC

Used for protecting a private network of machines behind an Ethernet connection to the Internet. This could be a cable modem, DSL/ADSL, leased line, or some other form of Ethernet–based connection such as an external ISDN router.

4 – Green NIC plus Orange NIC plus Red NIC

Used for protecting a private network of machines behind an Ethernet connection to the Internet as above, but also allowing public access to a network of machines.
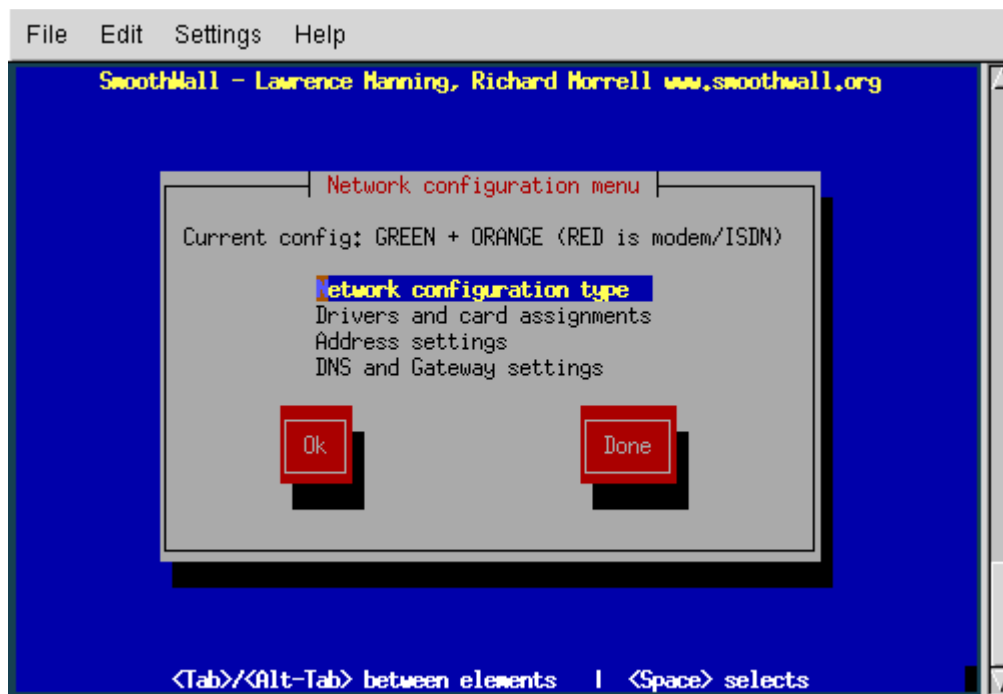
Figure 8 – Main network configuration menu

The default setting for SmoothWall is to assume that the Green NIC is present, and that the Red interface is a modem/ISDN connection – for protecting a small network behind a dial–up connection this is all that is required. If this is not the configuration that you require for your network then select the "configure network" option from the network configuration menu.

This then allows you to select one of the four options described above. If your network configuration is different from that of the default (Green NIC and Red ISDN/modem) then you will have to select the "Network configuration type" option from the menu. If the donor PC contains additional NICs, SmoothWall, as part of the installation, will have attempted to automatically determine the type(s) and number(s) of NICs that are present. When you change the network configuration to include Red or Orange interfaces that are NICs (and not a modem/ISDN network connection) you will be able to specify which NIC applies to each interface.

Figure 9 – Network type configuration menu

At this stage select the type of network configuration that you have and highlight and depress the "OK" button. You can then detect and assign any remaining network cards from the "Drivers and card assignment" menu option on the main network configuration menu.
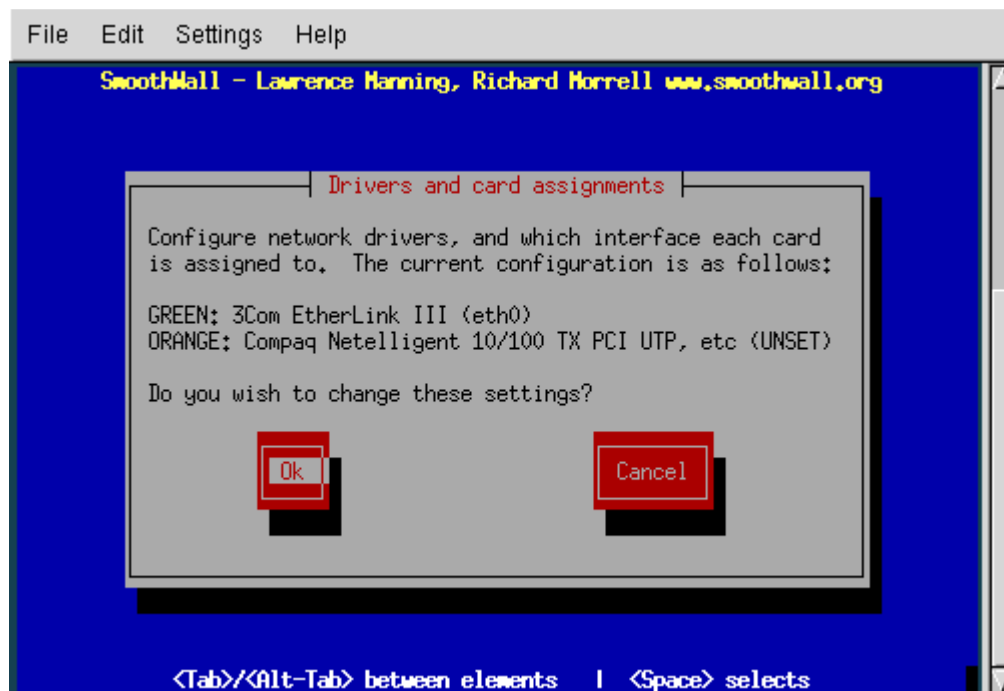
Figure 10 – Driver and card assignment menu

The "Drivers and card assignment" menu option allows you to select which NIC refers to the Red, Orange, and Green networks, and to detect and assign any as yet undefined cards. As part of the initial automatic probing for network cards that took place when SmoothWall searched for the Green NIC, other network cards were detected, and these can be designated and configured at this point.

If you wish to change the current settings select the "OK" button. This will lead you to a screen where you can detect (or re–detect) any extra NICs, and assign them to Orange and/or Red interfaces.
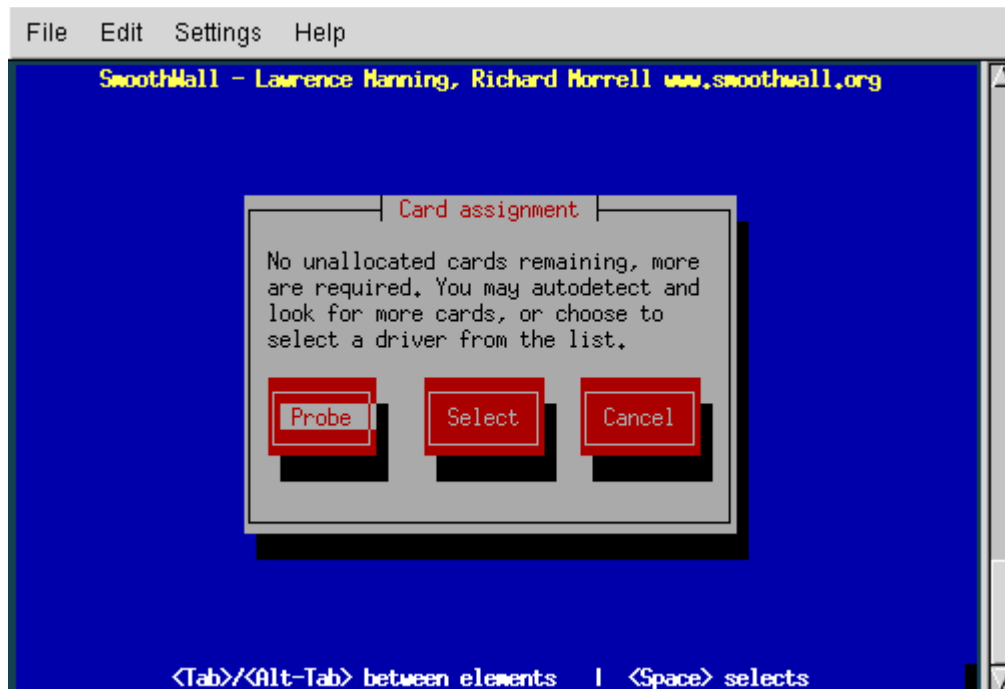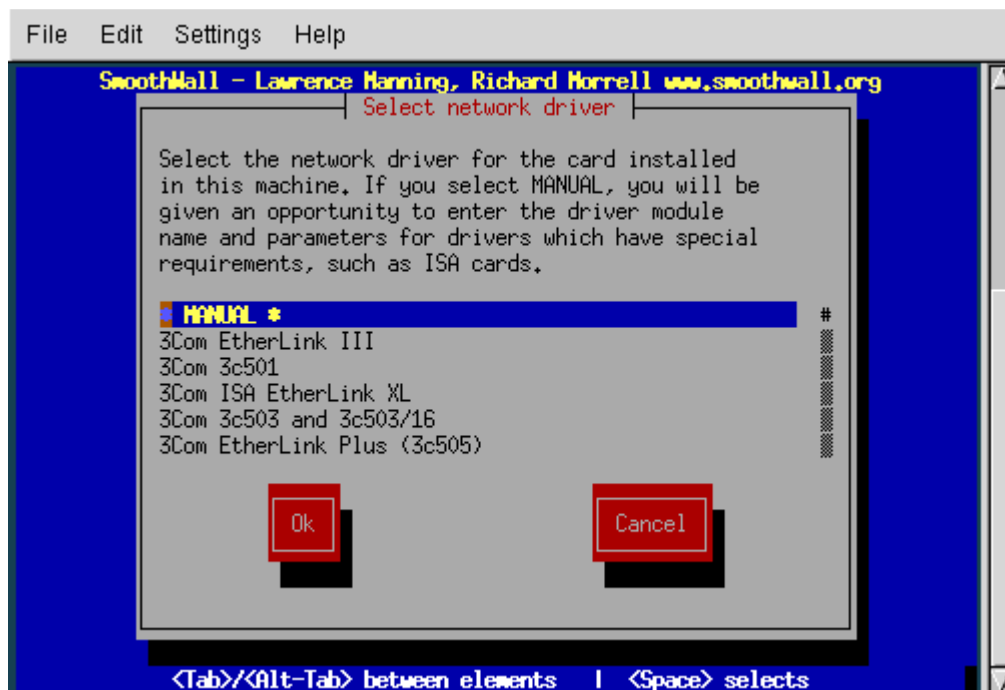
*Figure 11 – Network card assignment menu*

By choosing the "Probe" option an automatic search is made of the hardware in the donor PC to detect additional network cards. If this fails to detect the card, use the "Select" button to allow a manual selection of network card.

Figure 12 – Manual selection of network card driver

By selecting "MANUAL" you will be asked to enter the module name and module parameters for the network card.
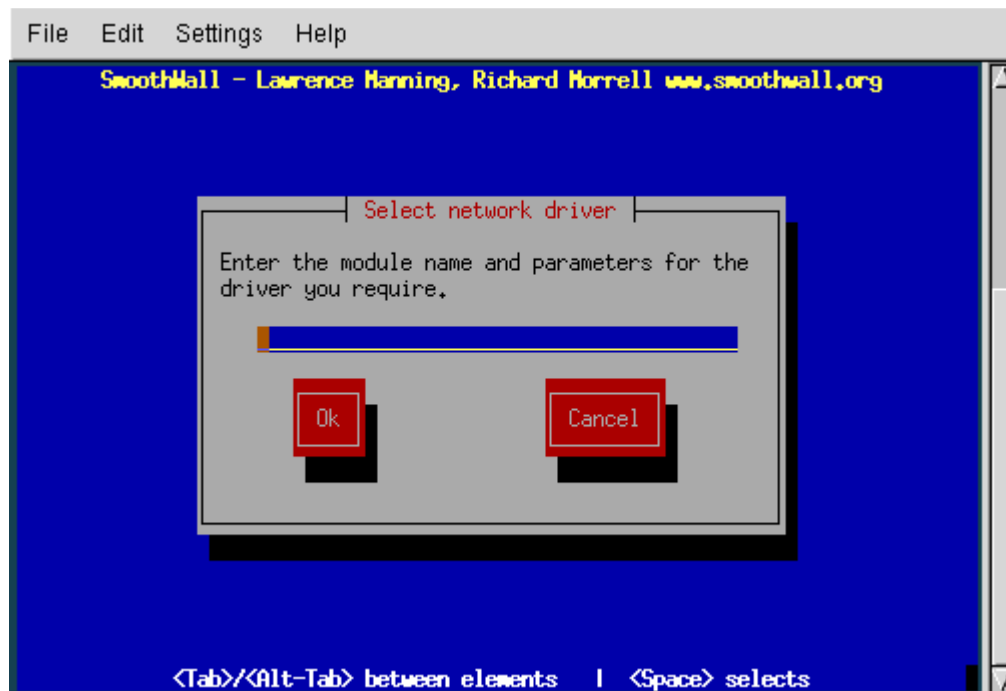
Figure 13 – Keyed selection of network card driver module and parameters

Once a card has been detected you will be prompted for an interface to assign this card to.
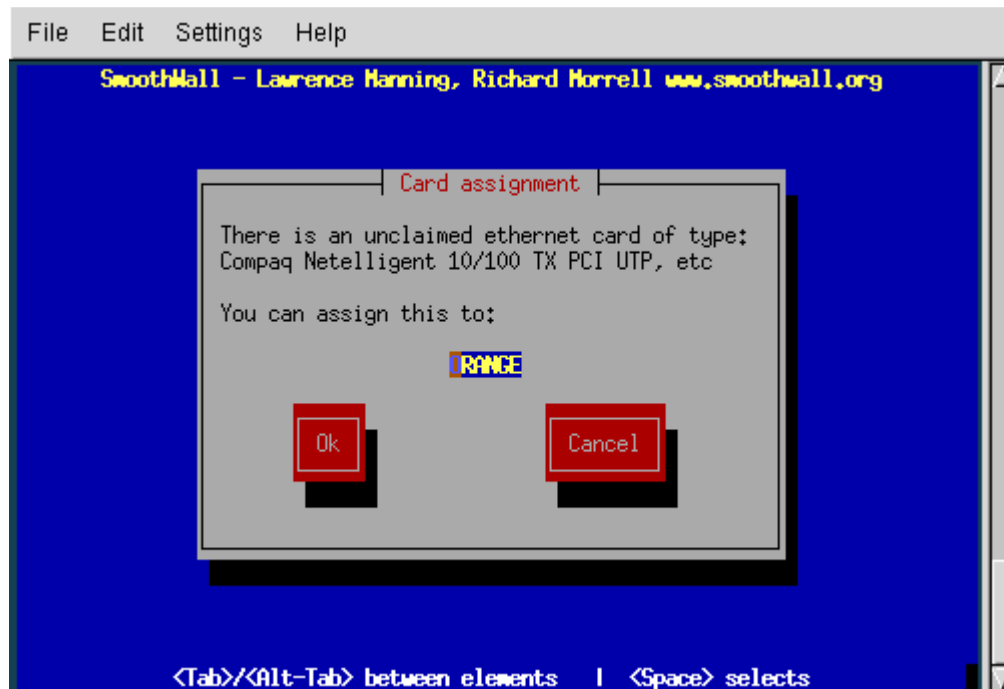
Figure 14 – Assigning network card to interface

Once all network cards have been detected and assigned you can set (or reset) the IP address and network mask for each of the network interfaces. This is accessed from the "Address settings" option in the main network configuration menu. Once you have selected an interface you can then adjust its settings (see fig 15 below)
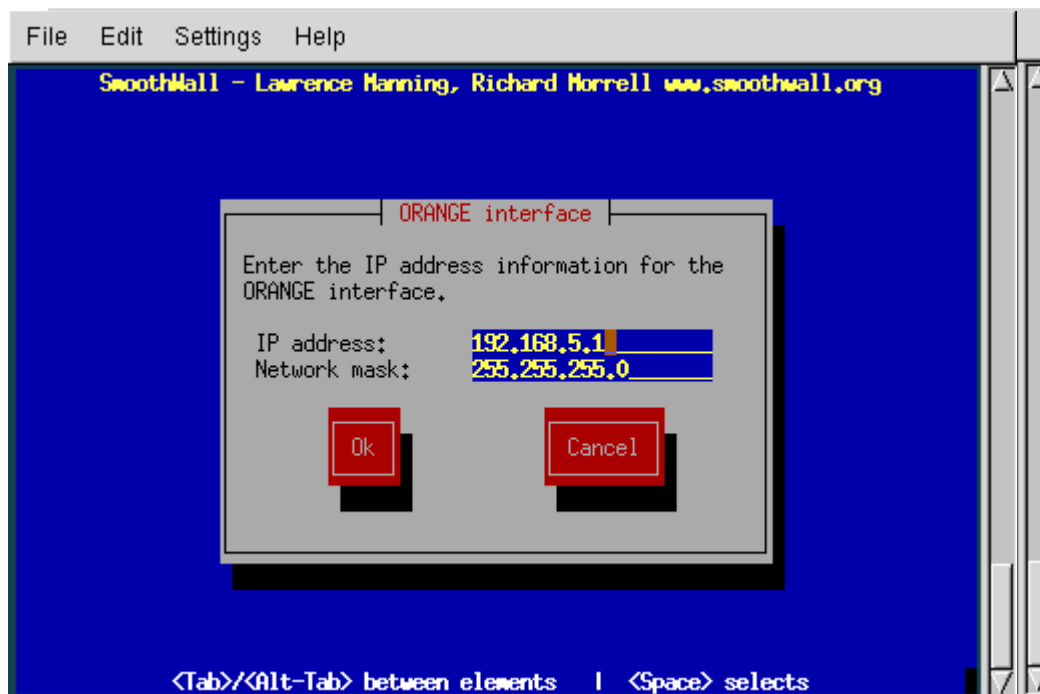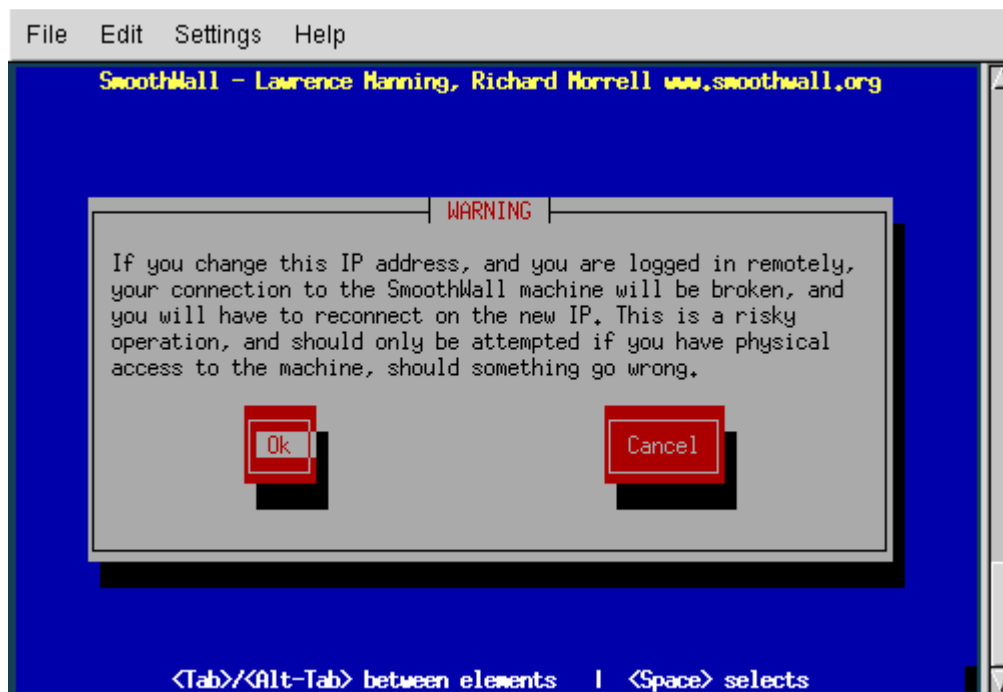
Figure 16 – Configuring the network interface

Note that if you try to reconfigure the Green interface while logged in remotely to the SmoothWall system you will be presented with an warning message – it is safer to change details of the Green interface while logged in to the SmoothWall system physically.

At least that way you will be able to reconnect to the machine in the event of a problem.

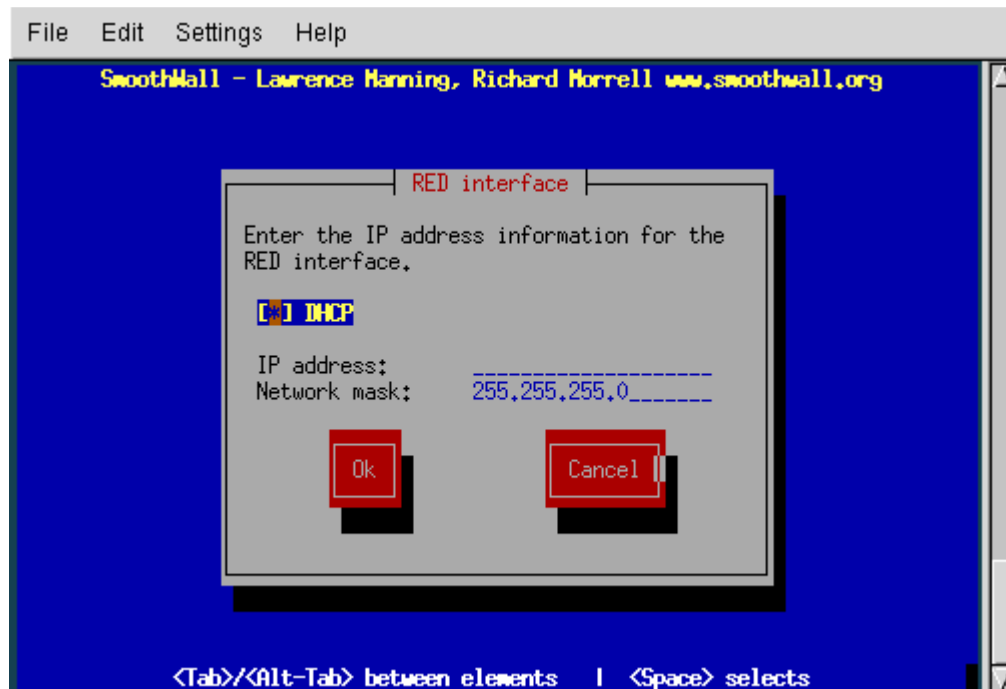*Figure 17 – Warning message seen when reconfiguring Green interface*

Figure 18 – Configuring the Red network interface

For the Red interface (the interface which connects the SmoothWall system to the Internet) there is an option to set the address details automatically from your ISP's DHCP server.

Note that this is different to the DHCP server that is part of SmoothWall – this service is provided to allow the SmoothWall server to automatically provide network addresses for systems attached to the Green network. If your ISP does not give you a permanent (or static) IP address for your connection to the Internet, you will be able to obtain a (non–permanent) dynamic address for the Red interface by selecting the DHCP checkbox.

Otherwise, enter the correct address details for the Red interface into the relevant areas.The final option on the main network configuration menu is the "DNS and gateway" selection. Choosing this option will allow you to enter the addresses of your ISP's DNS servers, and a gateway address for reaching them – this would typically be the IP address of your router. These details are only necessary if your Red interface is not using DHCP, as this information is passed to it by your ISP as a normal part of the DHCP request. If your Red interface has a static (permanent) IP address you will want to include details of a primary and secondary DNS server as well as a gateway address.
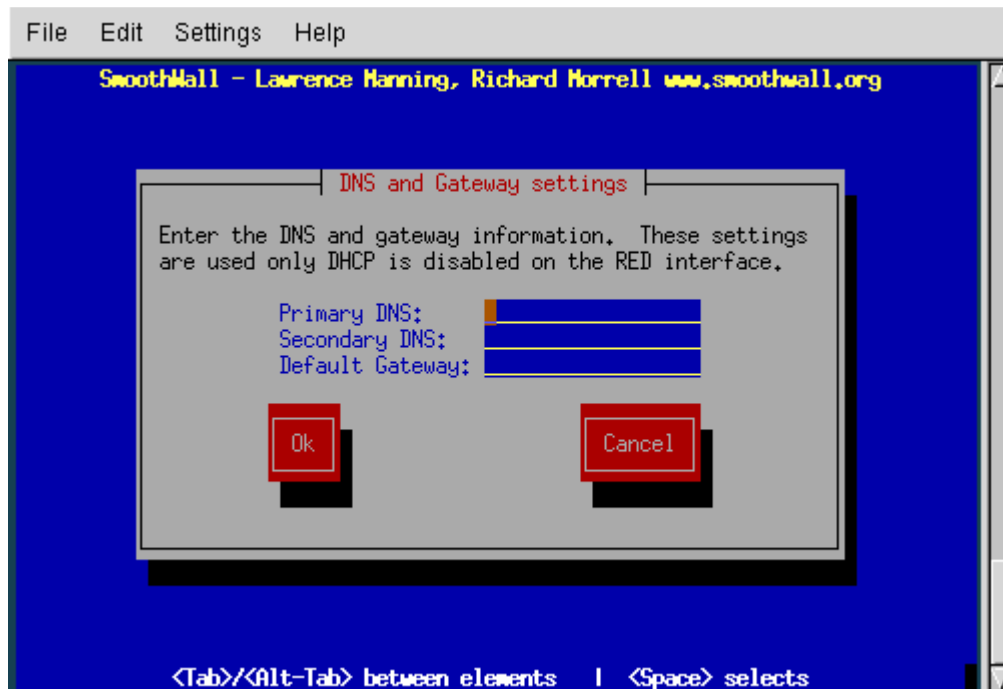
Figure 19 – Setting DNS and gateway information

This completes the configuration of the Ethernet configuration of your SmoothWall system. All that remains as part of the installation is the configuration of any ISDN connections, and to set passwords for the main users.
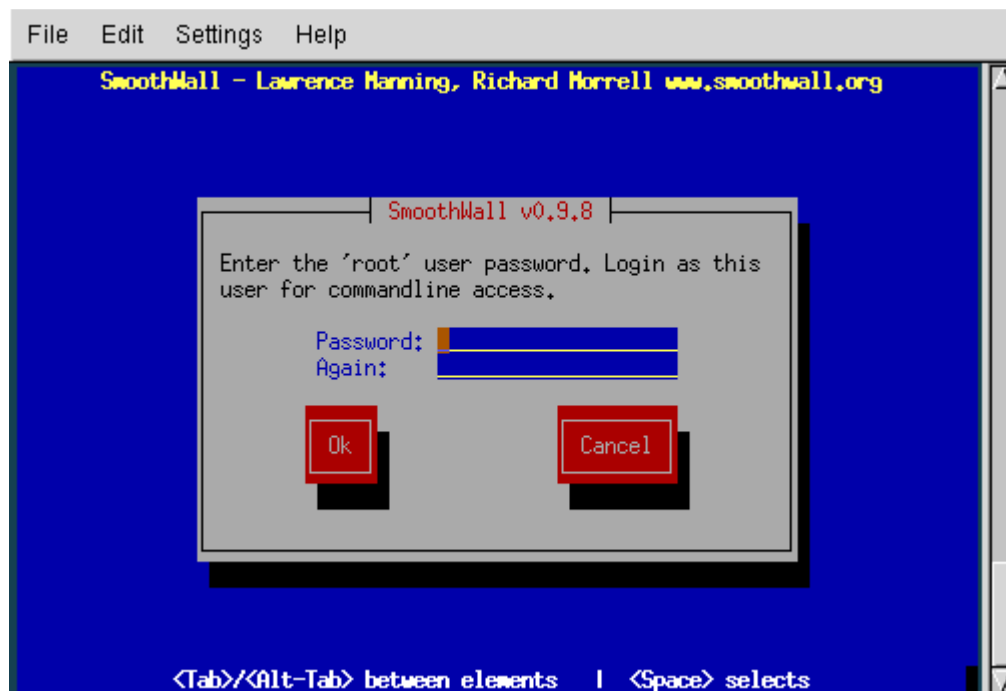
Step 8. Setting user passwords

The final stage in the installation of SmoothWall is to set passwords for three users. These users are as follows – firstly the "root" user, who has complete control of the SmoothWall system; secondly the "setup" user, which has the ability to change most of the configuration settings after the installation is complete; and finally the "administrator" user, who has access to the day–to–day controls of the SmoothWall system. There is a fourth user as well – the "dial" user, who has permission to initiate a dial–up connection to the Internet, but a password for this user is set and enabled through the browser–based interface.

Note that the administrator password will be the one that is used most frequently – this password grants access to changing all settings of the SmoothWall system, monitoring of the logfiles, and day–to–day maintenance of the system.

The administrator also has the ability to change both the dial user and administrator passwords, and to start or stop services provided by the SmoothWall system. The root password will only be required if you wish to physically log in to the SmoothWall system, and the setup user will allow you to run the setup program to make any post–installation configuration changes. All other maintenance and control of the system can be achieved through a web browser with the administrator password.

In all cases it is sensible to choose secure passwords because if the security of your SmoothWall box is compromised in any way the security of your protected network could be at risk. There are many methods to choosing a secure password, but the most important thing to note is that you should be able to remember it!

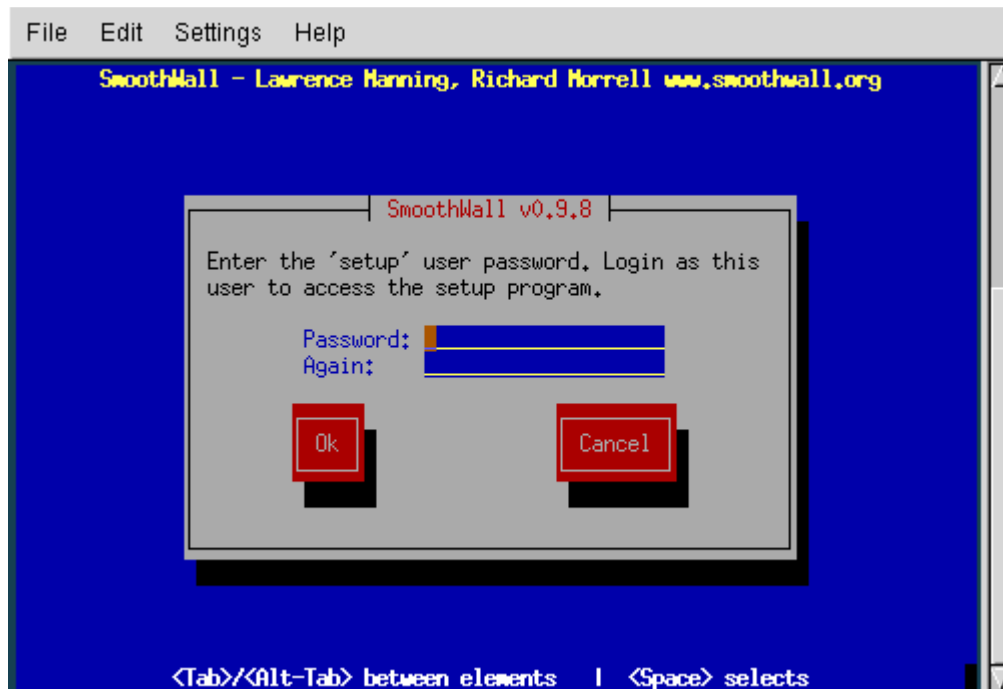*Figure 20 – Setting the "root" user password.*

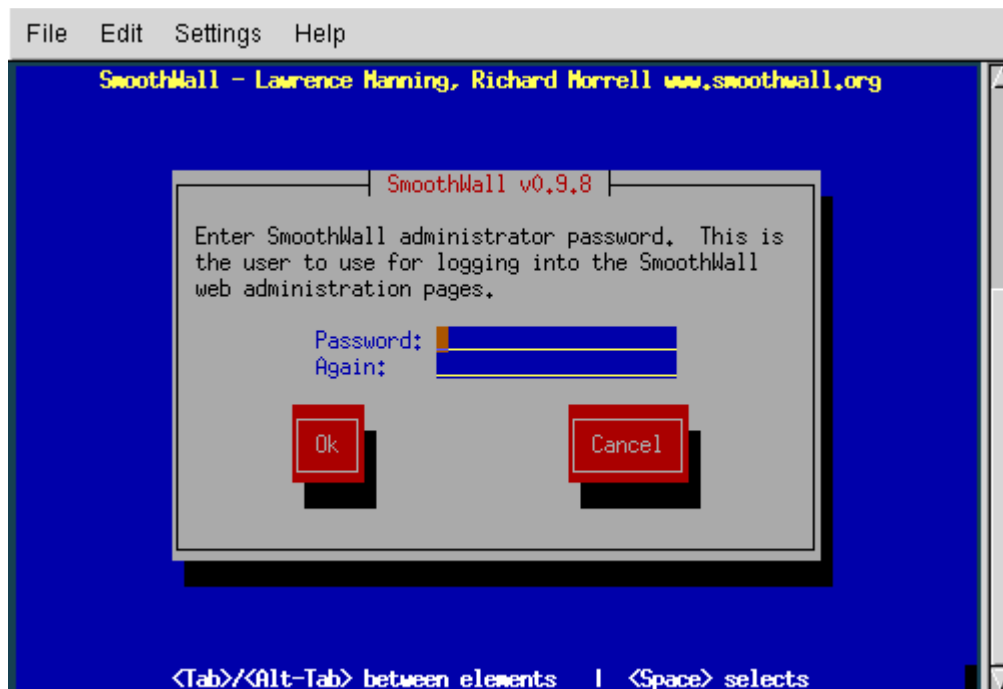Figure 21 – Setting the "setup" user password

Figure 22 – Setting the SmoothWall administrator password

Step 9. Final stages of installation

After having set the three main user passwords the system will prepare to reboot and bring up a live SmoothWall system. At this stage remove any CD–ROM or floppy discs from the drives and wait a few moments for the system to prepare itself. Depending on the speed of your donor PC this could be anything up to a few minutes.

Before rebooting, ensure that all necessary network cables are plugged in, and that your modem or ISDN card (if present) are connected and ready for use.

When SmoothWall has been initialised and is ready for use you should be presented with a simple screen with a brief notice at the top of the screen and a prompt asking you to log in.

You have now successfully installed SmoothWall. To configure the system further, and to check your network connectivity, go to a different machine on the local network (this is the network attached to the Green interface). Open a web browser on this new system and enter the IP address that you gave to the SmoothWall system's Green interface. This should shortly connect you to the browser–based administration screens of SmoothWall.

In the event that you cannot access this machine, the most likely problem is an error in network configuration. At this stage please refer to the Network Troubleshooting Guide that is to be found on the SmoothWall web site – http://www.smoothwall.org/ – for further assistance. You will also find on this site the most recent and up to date versions of all the SmoothWall documentation, including an expanded Configuration Guide that covers in more detail the contents of the online help system (found by clicking on the "Help" link at the bottom on any of the SmoothWall administration web pages).

Congratulations on protecting your network successfully!

The SmoothWall Team

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Appendix

Alternative Installations of SmoothWall.

When it is not possible to use the simplest method of installation – that of a local bootable CD–ROM drive – perhaps because the CD–ROM in the donor PC is not bootable, or even that the donor PC has no CD–ROM at all, it is still possible to install SmoothWall onto such a system.

In order to install SmoothWall on a donor PC system that has a CD–ROM drive, but one that is not bootable, it is necessary to create a bootable floppy disk instead. This will boot a version of the SmoothWall installation software that will detect your non–bootable CD–ROM drive and then enable further installation from that.

The process to create a bootable floppy disk is as follows:

If you have access to a Linux/Unix system of any sort that has a CD–ROM fitted, use the *dd* command to write a disk image from the CD to a blank floppy disk:

dd if=/path/to/cdrom/images/boot–0.9.8.img of=/dev/fd0 bs=1k count=1440

Alternatively for those without access to a Linux/Unix system, on the SmoothWall CD–ROM is a directory or folder called *dosutils*. This folder contains both a DOS and Windows program called *rawrite.exe* (or *rawritewin.exe* for the Windows version). The Windows version is the easiest to use, and requires the use of the *diskio.dll* file to operate – copy this file to your hard disk in the Windows or *Windows\System* directory. Select the "Write" tab and browse for the floppy disk image that you wish to use – in this case the file called boot–*0.9.8.img* in the images directory, and select the "Write" button to copy the disk image to a floppy disk. Instructions for use of the DOS program are included in the *README.TXT* file.

After this is complete you should have a bootable SmoothWall installation disk which will allow access to the local CD–ROM drive. At this point, continue following the main instructions for installation as if you have a bootable CD–ROM drive.

In addition, if the donor PC lacks a supported CD–ROM drive it is also possible to install over a network from a local web server that has made the SmoothWall files available for download by the donor machine. In order to do this, first create a floppy disk as detailed above, and in addition create a second disk using the drivers–*0.9.8.img* disk image instead. Copy the *smoothwall.tgz* file to a suitable location on your web server.

Boot from the first floppy disk, and when asked to choose the installation method select the "HTTP" option to install from a local web server. You will be asked for the second disk at this point as it contains the network drivers, and after configuring the network card you will need to provide a URL that points to the location of the *smoothwall.tgz* file. This file will then be downloaded to a temporary location before being installed, just as in the more usual CD–ROM installation.