Linux Netstation mini−HOWTO

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Linux Netstation mini−HOWTO

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This document tries to describe how to hook up a IBM Netstation to your local network using a Linux box as server.

6.Misc Stuf

7.Credits

1.Introduction

Some unused piece of delicious hardware floating around on my desk. Screaming to be used. 40 Mb's of ram and a 403 PPC inside.

So I decided to give it a try and connect it to my local Linux network. I want to thank the company I work for because they gave me the chance to experiment with it.

In this (Mini−Howto) we'll be dealing with an IBM Network Station model 8361−100, other models may be featured in the future.

It`s trying to describe how I setup the NC, there are probably lots of other ways to set up this machine, this one works fine. Any other remarks you might have from your own experience is welcome. (Free Hardware also ;−))

This MINI Howto is not trying to be the Bible on NC's and Linux, its trying to be something for you to get started from nowhere. Contributions to this NC are welcome

Things we still have to implement in this Howto

- How to export your homedir
- How to run applications
- How to run Java Applets

2.Requirements

2.1 Hardware

An NC, connected to your local Network, most likely by UTP, thus by a cross−cable or HUB connecting to an X Server. Herafter called the Linux Box. Basically the NC is Made to work with either AS/400 , Windows NT or AIX Servers. These are all expensive solutions, however working with thin clients doesnt have to cost that much.

The model I have at my disposal is an IBM Network Station model 8361−100, On the inside you can find an 403PPC chip, some S3 vga components, an PCMCIA slot, and normal 72pins (parity ??) sims. I found 8+32 Mb in my edition.

Actually those 40Mb were major overkill. In full operation modus the NC only uses about with lot's of configuration panels a couple of telnet sessions and a X −query open only took up about 4Mb of ram.) So taking out the 32Mb showed absolutely no significant loss of speed.

We proved it was no problem setting it up on a Linux only network. You`ll need a server that can provide you both with about 25Mb of free diskspace for the software, and the capacities to run a X −query. In the setup overhere we used a 486DX50 with 8Mb as a fileserver and I switch between another 486DX266 (PS/2 85) with 32Mb, and my Multia with 48Mb as the X server Off course, the fatster machines the better.

2.2 Software

IBM Software.

NC Kernel, fonts etc.

In order to boot the NC you will need its Kernel and fonts. About 25Mb of files are needed on the server. They can be found on an AIX 4.X with the Netstation modules installed. Or from the IBM Netstation Download Page

NFS Server.

A working NFS server, like in every default Linux distribution. Approx 85Mb of diskspace has to be exported to the NC.

X Server.

Any machine running XDM with enough memory, processor power will do. You don't need to have X configured on the machine itselve, it can perfectly be a monitorless server. Basic X Windows install will provide you with the necessary deamons.

Optionally

DHCP Mini Howto on sunsite

3.Other Usefull Documentation

Mainly the IBM website. It contains lot's of docuentation on the NC, most of it can be found in the .pdf format.

Latest updates can be found at http://www.as4000.ibm.com/networkstation/rs6000/ including

- IBM Network Station Runtime Environment for RS/6000 Users's Guide
- IBM Network Station Runtime Environment for RS/6000 System Administrator's Guide
- IBM Network Station Runtime Environment for RS/6000 System Navio NC Navigator Browser Guide

  Or from http://www.ibm.com/nc/pubs/
- IBM Network Station Setup and Use

4.Setting up the Serverside

You found all the software you needed. Now let's install them.

4.1 AIX License

Before making the tarball on the aix machine, make sure you run /usr/netstation/bin/agree in order to make the kernel in a usable format. Probably you will have to do the same thing with the tarball you get from the IBM website. So finding the kernel separatly might be another solution. Find some drive with about 25Mb of free diskspace, I use /usr/netstation/, and unpack the tarbal either from the IBM website or from an AIX machine. There is no need in leaving the approx 60Mb from /usr/netstation/doc on the disk if you don't have enough diskspace.

4.2 The Real Operating System

Setting up the nfs server

Edit your /etc/exports, add the line /usr/netstation 10.0.0.50(rw) Where 10.0.0.50 is the ipnr you want to give to the NC. Restart your nfs deamon.

[root@velvet sdog]# ps auxf |grep rpc sdog 4145 0.0 5.8 828 384 p1 S 03:55 0:00 _ grep rpc root 3120 0.0 5.7 944 380 ? S Feb 27 0:00 rpc.mountd root 3129 0.0 1.5 880 100 ? S Feb 27 0:10 rpc.nfsd [root@velvet sdog]# kill −9 3120 3129 ; /usr/sbin/rpc.mountd ; /usr/sbin/rpc.nfsd

or on a RedHat alike system easier

[root@velvet init.d]# pwd /etc/rc.d/init.d [root@velvet init.d]# ./nfs restart Restarting NFS services: rpc.nfsd rpc.mountd done. [root@velvet init.d]#

Your NC should now be able to mount the /usr/netsation by NFS.

Bascially if you don`t need X−Windows this is as far as it gets. You can easily telnet from your NC with nothing more installed. Hoever the beauty of this thing is it`s X capacities

Setting up the X server

Next we have to set up the X server. Basically I didn`t need to set up anything, all of my machines that ran X−Windows were configured to accept connections. I just started up the NC for the first time and it showed me all the machines that ran an XDM (cfr running an X −indirect). So any machine that can run xdm can be used as X Server. Just make sure XDM is So any machine that can run xdm can be used as X Server. Just make sure XDM is started.

Everything on the server side should be setup now. Lets try the NC side.

5.Configuring the Thin Client

Unplug the network cable from the NC. Then boot it up.

It will boot after checking its Memory, VGA etc, in a screen IBM Network Station Setup Utility. Basically you can manage everything from this menu system. The main parts will be described here.

5.1 Setting up TCP/IP

Section 5 (F5) : Your network setup should look something like this :

IP Addressed From NVRAM Network Station IP Adress 10.0.0.50 First Boot Host IP Adress 10.0.0.1 Second Boot Host IP Adress 10.0.0.11 Third Boot Host IP Adress 0.0.0.0 Gateway IP Adress 10.0.0.1 Subnet Mask 255.255.255.0 Broadcast IP Adress 10.0.0.255 Ethernet Standard Version 2

Resembles my setup. The NC itselve has 10.0.0.50 While 10.0.0.1 is the NFS Server, 10.0.0.11 is a secondary NFS server, just in case.

5.2 Setting Up the Boot Parameters

Section 6 (F6): Looks like this in my setup.

Boot file kernel TFTP Boot Directory /usr/netstation/ NFS Boot Directory /usr/netstation/ Configuration File /usr/netstation/configs/standard.nsm Configuration Directory /usr/netstation/configs TFTP Order 2 NFS Order 1 MOP Order Disabled Local Order Disabled

Where /usr/netstation is the directory export on 10.0.0.1

5.3 Setting Up the Monitor

Section 7 (F7): You can choos the right resolution / Refresh rate from a nice menu. I have mine running on an old 14" VGA Screen running in 1024x768 @60Hz

Basically thats all you need to install.

Just plug in your Network cable again. And Reboot the NC. After testing the Video / DRAM, the NC will search the Host system and request the startup information, download the Kernel from the NFS and boot up.

It might occur that the NC first gets a new FirmWare and upgrades it

When starting the graphical Console you should get a menu bar and a screen where you can select the X Hosts. You are now in the CLE (Common Login Environment): it's a desktop from where you can start all sessions, either telnet or X . It uses a local window manager which is a small window manager based on Motiv.

Your NC is setup now. Congratulations

5.4 Further Configuration

Further configuration of the NC can e.g. be setting the colors, window sizes, default keymaps etc. I'm not going to describe these in detail. If you have troubles finding your way through the menu system. The IBM Network Station Runtime Environment for RS/6000 User's Guide which can be found in either .pdf or .ps at http://www.as400.ibm.com/networkstation/rs6000/ and will provide you with detailed information.

6.Misc Stuf

6.1 TroubleShooting

Q: I get an Invalid Kernel Type while tryng to boot the NC. A: You didn't run the agree script. Q: I log in at the remote host and my keyboard settings fuck up. A: I use no .Xmodap when working on the NC. This keeps my keyboardsettings perfect.

6.2 Experiences

Using the NC as a plain terminal with multiple consoles. The Built−in Motiv extensions are a lot easier to use than the default setup ;−) Pressing the Pause/Break key will pop up the NC Menu at any time.

Port 5978

Remote Logging It`s the same as the messages console in your CLE.

Port 5999

Remote managment for the NC This is acutally a call for help. Strobing the NC , I found some usefull ports. Among them 5999, I still haven't found the exact way how to deal with it. However here are some commands that showed me to be usefull. You can apparently configure the NC remotely.

- help
- get boot
- get tcpip
- get file
- get nfs
- get tftp

7.Credits

Lots of thanks must go out to Wouter Cloetens, wcloeten@raleigh.ibm.com for getting me started and to Bart Geens ,Bart.Geens@advalvas.be for rereading this howto and findin uot lost of splelling errosr

If somebody has more info on these, help is welcome. They seem to be some SNMP thing but I have no expericience at all on that matter.
