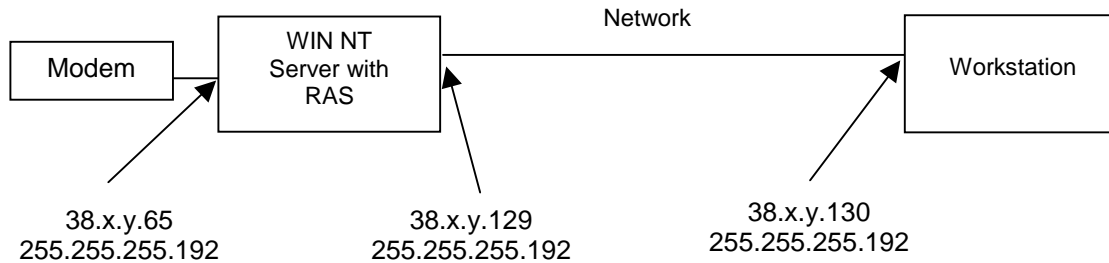


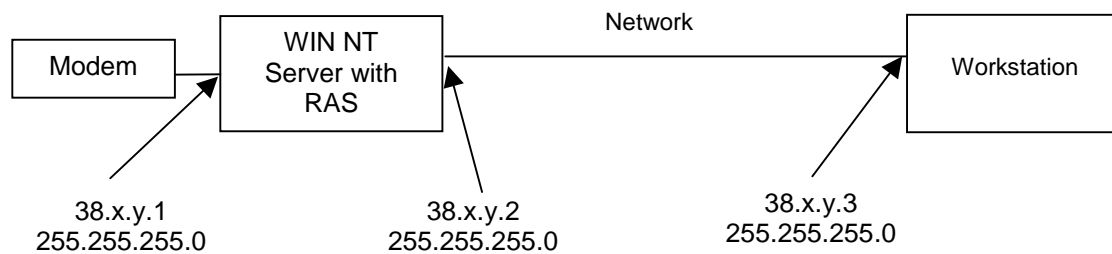
Windows NT RAS for LAN-Dial Service

There are two options for setting up NT RAS:

The subnetting method -> NT router.subnet. This is where you subnet the network and give the RAS interface an IP address on one subnet and the NIC card an IP address on the other subnet. This method will work for 2 or more subnets.



The non-subnetted method -> NT router.nonsubnet. This is where the RAS interface is .1 and the Ethernet interface is .2 and .3-254 can be used on the network.



NT router.subnet:

Internet Routing with Win NT Server 3.51 RAS.

If you are using Windows NT 3.5x and are trying to setup a simple router to your local network using RAS, you may find this document helpful. To save many of you the HOURS we spent, we have summarized our findings in the enclosed document. The documentation specifically addresses WinNT 3.51 and Windows 95 configuration issues. However, we understand that routing also works fine with WinNT 3.50 servers and with Windows for Workgroups workstations.

General:

You must have a valid lease from a service provider that does not use WinNT as a host. You may use static assigned IP addresses, or DHCP. Both work fine.

Subnetting:

Class C lease must be subnetted according to standard TCP/IP rules for subnetting.

The RAS IP address (the router address) must be on a different network (subnet) from the other computers (The server NIC and all workstation NIC's must all be located on one subnet that is different from the RAS subnet).

For example: A subnet mask of 255.255.255.192 for a Class C lease provides 62 addresses on each subnet. .65 to .126 for the local network (server and workstations) and .129 to .190 for RAS.

Windows NT RAS for LAN-Dial Service (cont'd)

Note: You do not have to assign an IP address for the router in the same network as the internet service provider as indicated in the diagram on page 421 of the WinNT resource kit (198.220.250.0 to 198.220.250.15). Although this has been a controversial point in theory, separate IP addresses work fine and were easier to implement.

NT Server 3.51 Configuration:

REGISTRY SETTINGS:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\RasArp\Parameters\
 DisableOtherSrcPackets REG_DWORD 0

Note: The default value is 1 - the default value is incorrectly documented in the resource kit.
 See PSS ID Q121877

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\RasMan\PPP\IPCP\
 PriorityBasedOnSubnetwork REG-DWORD 1

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\TCPIP\Parameters\
 IpEnableRouter REG-DWORD 1

Note: This is not documented in the resource kit.

No default gateway should be set on the NT machine (control panel, network, TCPIP)

*configure the following RAS settings (RAS phonebook, edit, network, TCPIP):

Use VJ header is optional (can be checked or unchecked)

"use default gateway on remote network" should be checked

Your Internet service provider DNS ipaddress should be specified in RAS phonebook, network, TCPIP.

Verify that the route command has a correct entry on the server by typing ROUTE PRINT from a command prompt. You should see a route entry as follows:

Active Routes:

Network Address	Netmask	Gateway Address	Interface	Metric
0.0.0.0	0.0.0.0	(ipaddr of gateway)	(IP of server) (RAS ipaddr)	1

If you do not see an entry similar to this one, you may use the following syntax on the 3.51 server:

Route -p ADD 0.0.0.0 MASK 0.0.0.0 (IP address of router (RAS))

Windows NT RAS for LAN-Dial Service (cont'd)

NT router.nonsubnet

Connecting a class C network to an Internet service provider using Windows NT as a router.

1. Introduction

This procedure describes how to get systems on a local LAN to connect to an Internet Service Provider using an NT3.5 Server with a modem as the router.

The bulk of the information is contained in the NT3.5 Resource Kit, Volume 2, Chapter 22, Remote Access Service and the Internet. Instructions for the dial up parameters come from the Remote Access service. The example that follows shows how it works using a LAN DIAL.

The IP addresses shown in the example are basically ours, with one of the first octets modified, to prevent accidental IP conflicts.

A basic network upon which you can build is the following.

```

LAN Workstation -----> NT Server 3.51-----> Internet Service Provider
                        TCP/IP                      RAS
    
```

2. Set up the local LAN

An example configuration is as follows:

	Workstation:	Net client	Net server, w/RAS to Internet
	NetBIOS name:	\\samos	\\athena
O/S:	WFW3.11		MT Server 3.51
Addr:	212.241.136.248		212.241.136.9
Subnet:	255.255.255.0		255.255.255.0
Default Gateway:	212.241.136.9		blank (NB)
DNS:	38.8.17.2		38.8.17.2

Test that you can ping from the net client to the RAS server and back. It does not matter whether the local workstations get their IP configuration from a DHCP server, or you configure them locally. The IP addresses used must be real addresses, that is, they must belong to the class C net assigned to you by your service provider. Do not use the IP address the service provider gave you (e.g. 212.241.136.1) - that is reserved for your RAS interface. Do not use our IP addresses, obviously - use yours!

3. Set up RAS

First, get an account with the service provider. Once activated, they provided the following:

```

Account ID: LDxxxx
Assigned IP address: 212.241.136.1
Domain name:      widget.com
IP address of POP: 38.8.180.110
Phone no. of POP: (703) 904-0600
    
```

Windows NT RAS for LAN-Dial Service (cont'd)

They give you another sheet of paper, by separate mail, confirming your account ID and giving you a password. Use the instructions in Appendix A below, with the following differences:

- In item 8, do not select 'Server assigned IP address'. Enter the IP address given to you by your service provider here. For example, 212.241.136.1.
- In item 8, Select 'Use default gateway on remote network'.
- In item 11, enter your LAN DIAL account number and password. For example, LDxxxx.

Test RAS by dialing into the POP. Once connected, open a DOS window on the RAS box and try some tests:

First, try a ping. It should work. If it does not, RAS is not properly set up. If it does work, you have the PPP set up ok.

Then try to ping 38.8.32.2. If it does not work, call your service provider.

Try to ping ftp.microsoft.com. If it does not work, you have entered an incorrect DNS server address in your RAS and TCP/IP configurations.

Try to ping a box on your local subnet. If it does not work, go back to step 2 above.

4. Getting the RAS server to route TCP/IP

On the RAS server, open up the registry editor and add or modify the following two keys to the values shown:

```
\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters
IPEnableRouter (REG_DWORD)=1
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\RasArp\Parameters
DisableOtherSrcPackets (REG_DWORD)=0
```

Note that the MT3.5 Resource Kit has a misprint on page 420: it should be set to 0, not to 1 as stated in the book. Reboot the server, for good measure.

5. One last problem

Download Q128647 from the Microsoft Knowledge base for a description of the problem, though the circumstance requires a slightly different solution.

For the RAS box to act as a router, it must know that any IP packets it receives destined for your local subnet (212.241.136.0 in the example above) should be sent to its NIC (212.241.136.9 in the example). Any packets it receives destined for anywhere else should be sent to the RAS interface (212.241.136.1 in the example). However, when you bring up RAS, it clobbers the current routing table and you need to rebuild the routes.

Before dialing the service provider, open a DOS window on the RAS server and type ROUTE PRINT. You will see an entry for the NIC card, and for the loopback (127.0.0.0), plus a few others that we can ignore. Now dial the service provider and retype ROUTE PRINT. You will probably see two entries for your local Lan (212.241.136.0 in the example), showing that packets should be sent first (Metric = 1) to the RAS interface (212,241.136.1) and therefore your ISP, and only second (Metric=2) to the NIC (212.241.136.9) and therefore to your LAN.

Windows NT RAS for LAN-Dial Service (cont'd)

This messes you up, big time. So you need to delete the entry and rebuild it. To do this, first dial the service provider. Then, from the DOS window, type:

```
route delete 212.241.136.0
route add 212.241.136.0 mask 255.255.255.0 212.241.136.9
```

This needs to be modified, of course, for your real *class C* address. What it does is make sure that any packets for the local Lan that are received by the RAS box are redirected to the NIC on the server, that is, to your local lan.

The simplest thing to do is to put all this in a batch file, and then execute the batch file to dial and correct the routing table. See Appendix B for a sample batch file. The routing table on our NT3.51 server that works is as follows:

Active Routes:

Network Address	Netmask	Gateway Address	Interface	Metric
0.0.0.0	0.0.0.0	212.241.136.1	212.241.136.1	1
127.0.0.0	255.0.0.0	127.0.0.1	127.0.0.1	1
212.241.136.0	255.255.255.0	212.241.136.9	212.241.136.9	1
212.241.136.1	255,255,255,255	127.0.0.1	127.0.0.1	1
212.241.136.9	255,255,255,255	127.0.0.1	127.0.0.1	1
212.241.136.255	255,255,255,255	212.241.136.9	212.241.136.9 1	1
224.0.0.0	224.0.0.0	212.241.136.1	212.241.136.1	1
224.0.0.0	224.0.0.0	212.241.136.9	212.241.136.9	1
255.255.255.255	255,255,255,255	212.241.136.9	212.241.136.9	1

At this point, you should be able to go to your arbitrary desktop and type ftp.microsoft.com and see it work. If you get a 'Request timed out' message at first, don't worry. It sometimes seems to take about a minute for the routing to propagate from the Lan to the Internet.

Appendices:

A . Message from Customer Support on Installing RAS Dial up for Remote Access. These instructions have been modified for LAN-Dial. Remote Access setup using v.32bis and Remote Access software for Windows NT 3.5.

Setup Instructions:

1. From the Main window, choose Control Panel then choose the Network option.
2. If 'Remote Access Service' is not listed In the Network Settings dialog box, choose the Add Software button.
3. If properly installed the TCP/IP services , TCP/IP protocol should also be listed.
4. After installation a Remote Access(common) pro-gram group is created
5. From the Remote Access window choose Remote Access. Choose Add to create a new entry. Fill out the Edit Phone Book Entry dialog box.

Example:

Entry Name: Internet

Phone Number: (703)904-0600

Description: Internet Connection

Windows NT RAS for LAN-Dial Service (cont'd)

Leave the 'Authenticate using current user name ...' unchecked. Verify that the correct port is selected for the device shown.

6. Choose the 'Advanced' then choose 'Modem'.

In the Modem Settings dialog box:

NOTE: Verify modem settings. The initial speed (bps) should be set to 19200 or higher, The modem should be able to negotiate the appropriate speed. Hardware flow control and Modem Error control should be enabled. Modem compression can be enabled but as far as I have been able to determine many ISP's do not support compression. Windows NT reports 0% compression.

'Enter Modem controls manually' should be disabled. Choose OK to continue.

7. Choose Network

In the Network Protocol Settings dialog box: Select PPP.

Enable 'TCP/IP'

Disable 'Request LCP extensions(RFC1570)'

'NetBEUI and IPXI should be left as they appear.

If a network card is not present they will be disabled by default.

8. Choose the TCP/IP settings button

In the PPP TCP/IP Settings dialog box:

Do not Select 'Server assigned IP address' (see instructions above)

Select 'Use specific name server address'

Enter specified DNS and DNS backup addresses

Example:

DNS-. 38.8.17.2

DNS backup 38.146.21.2

Disable both 'Use VJ header compression' and 'Use default gateway on remote ...'. (not for gateway - see instructions above). Choose OK to continue.

9. Choose Security

In the Security Settings dialog box:

Select 'Accept any authentication including clear text'. Before dialing and After Dialing scripts should be set to (none). Choose OK to continue.

10. Back in the Edit Phone Book Entry dialog box. Choose OK to save settings

11. To initiate connection:

Start Remote Access (located in the Remote access program group). The Entry Name previously configured should be listed.

Select it, and choose 'Dial'.

Windows NT RAS for LAN-Dial Service (cont'd)

In the Authentication window:

Enter the User Name (ID only):
Enter the Password:
Do not enter a Domain Name
Choose OK to dial access number.

B. Batch File to Dial and Correct Routing Table

```
rasdial isp <your LAN DIAL account number> <your LAN DIAL password>  
route delete 212.241.136.0  
route add 212.241.136.0 mask 255.255.255.0 212.241.136.9  
route print  
ping 38.8.32.21
```