WNOS3 Command Summary

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1. Command Syntax
This section details each command (and its sub commands) available in WNOS3
(version 3a). The following syntax is used...

command [<parameter>]   - Denotes that <parameter> is optional
command <alt1|alt2>   - Either the alt1 or the alt2 parameter at be
                                supplied to command.
command [<parameter>ˆ..]   - Parameter <parameter> is optional and there can
                                be more than one <parameter> specified.

For example, The "icmp trace" command

syntax is icmp trace [yes|no]

so valid commands Would be

icmp
trace
icmp
trace
yes
icmp
trace
no

The word argument is often used as a synonym for a

above. **1.1. WNOS Program Command Line Arguments**

1.1.1. wnos ^{-b} **[-s <sockets>] [-d <root_directory>]**

[<startup_file>] 1.1.1.1.   -b
Use BIOS calls to perform output to the console. Us this option if
you use WNOS with a windowing package and have trouble with output
"bleeding" on top of other windows.

1.1.1.2. ¨ˢ **<sockets>**

Specifies the number sockets available in the program. The default is 40.

1.1.1.3. **-d <root_direct^ᵖry>**

Allows WNOS to run with a "root" directory other than the default which is the root of the system etc). NOTE that a drive letter *MUST NOT* be given! (see example below)

1.1.1.4. <startup_file>

Defaults to "autoexec.nos" if

not given. **1.1.1.5. Example**

wnos startup line wnos -$_b$ -s

50 -d/tcpip autoexec.wno

Would start WNOS with BIOS output, a socket array of 50, starting in the sub-directory /tcpip (either forward or back slashes are acceptable) with a startup file called "autoexec.wno".

1.2. **Command Keys**

1.2.1. **Return (Enter)**

Swutches from current mode (Trace ˏˏor Command) to cureent

session. 1.2.2. **ESCape** & **F10**

Switches from current session to Command Mode.

1.2.3.   F1....F8

Switch to session (eg F2 switches to session 2 (if

active)). 1.2.4. **F9**

Selects the Trace output screen. If there are active sessions it will toggle between Trace and the current session, otherwise it toggles between Trace and Command screens.

1.2.5.   ?

A synonym for the "help" command. Shows a list of top-level commands.

1.2.6. !

A synonym for the "shell" command. Starts a DOS session (use the DOS "exit" command to return to WNOS).

1.2.7.

Denotes that this line is a comment. Useful in the autoexec.nos and other startup files.

1.3. abort [<number>3

Aborts file transfer-in the given FTP

session. **1.4. arp**

Display the ARP (Address Resolution Protocol) table which defined the ^{mapping} of Internet addresses to link layer addresses (AX.25 or NET/ROM callsigns or EtherNet addresses).

Add an ARP table entry for host <host> and define its link layer ^{mapping.}

Remove the entry for host <host>from the ARP table.

1.4.3. arp flush

Flush the ARP table of all dynamic ARP entries.

1.4.4. arp publish <host> ax25|ether|netrom <ethernet_address|callsign>

Like "arp add" except the system will respond to *any* ARP request that seeks the specified address. !Use with care!.

1.4.5. arp save [<minutes>]

Without a parameter, display the interval between writing the ARP table to disk (file arproute.dat).

With parameter, set the interval between saving the ARP table.

1.5. asystat

Show statistics from the attached asynchronous (RS-232/V24) ports.

1.6. attach

Attach a communications driver.

Note that comms drivers a compiled into WNOS according to desired configurations. Not all drivers are documented here but WNOS supports the following

```
PC100        = PacComm PC100 INC Card
HAPN         = Hamilton Area Packet Network driver card
ARCNET       = ArcNet driver
SLIP         = Serial Line IP
HS           = High Speed (56k bps) modem card
EAGLE        = Eagle Card Driver
Packet       = FTP Software Inc driver/88BPQ Node
Appletalk    = Mac Appletalk Network Interface
NRS          = NET/ROM Back End interface
DRSI         = DRSI card driver
SLFP         = Serial Line Framing Protocol driver
VANESSA      = HB9RWM/ETH Zurich PC TNC card
```

1.6.1. attach asy <addr> <vector> slip1nrs|ax25 <label> <buffers> <speed> [<c|v>]

Attach an asynchronous comms driver to WNOS. The $_{types}$ are as follows

slip - SLIP (Serial Line Internet Protocol) IP encapsulation
nrs   NET/ROM asynchronous framing protocol (NET/ROM "back-end")
ax25   AX.25 using the KISS (Keep It Simple, Stupid) TNC protocol

Flags - c = Use CTS/RTS handshaking between host and TNC - v = Use VJ
              header compression on SLIP lines

Examples

```
    # Attach KISS TNC to COM1: with a serial link speed of 9600bps
    # The interface is called "144"

    attach asy 0x3f8 4 ax25 144 2048 256 9600


    # Attach SLIP line, called sl0 to COM2

    attach asy 0x2+8 3 slip sl0 2048 10 24

    9600
```

1.6.2. attach netrom

Attach the NET/ROM port.

1.6.3. attach axip <label> <mtu> <remote_host>

Attach the IP ax25 encapsulator interface.

1.6~4.   attach   scc   <devices>   init   <addr>   <spacing>   <Aoff>
<Boff><Dataoff>
          <intack> <vec> [p|r]<clock> [<hardware_type>] [<param>]

Attach the PE1CHL SCC (Zilog 8530> generic driver. This may also drive
DRSI cards.

1.6.5. attach packet <vector> <label> <queue> **<mtu>**

Attach packet driver conforming to the FTP Software Inc packet driver
standard. This is also used to interface to the G8BP0 TheNode software
using the "NODEDRV4" TSRs to provide the channel to the radio(s).

1.6.6. attach kiss <existing_asy_iface> <port> <labeI> [<mtu>]

Attach a multi-port $_{KISS}$ TNC (eg KAM, KPC4 etc). These TNCs encode two RF
channels onto one serial KISS channel and attaching a "kiss" interface
will enable decoding ofboth channels. It must be attached to an existing
interface (asy type) and <port> specifies the encoded bit that carrys
the other channel. An optional MTU (Maximum Transmission Unit) may also
be specified. The new interface will be called <label> and copies the
parameters of the existing "parent" interface.

1.7. attended [<yes{no>]

Flag whether the local $_{sysop}$ is present. If $_{yes,}$ connects to the station via
"chat" will then be signalled with the connect bell (if the "bell"
command is >= 1). If the $_{sysop}$ is not present, users are asked to leave a
message.

With no argument, just show the current "attended" state.

I.S. attribute colour|mono

Display the status line in colour or black/white (in mono). The default
is colour.   ~

1.9. ax 25

Theses commands deal with all aspects of the machines handling of the
AX.25 link-layer protocol,

1.9.1. ax25 bc <iface>

Sends an AX.25 broadcast (UI frame) out on the given interface. The
frame is sent to destination callsign "ID ".

1.9.2. **ax25 bcinterval [<seconds>]**

With argument, set the interval in seconds between broadcasts of the IDents,
_n_ is =..65536 seconds). Use ax25 bcinterval 0 to disable Without argument,
just display the current setting.

1.9.3. **ax25 bctext [<text>]**

Define the text string to be sent out as an IDent.

Without argument, display the current broadcast text.
1

been Procesed.
.9.4. **ax25 close <axcb>** Disconnects the given AX.25 connection after all outstanding frames have

1.9.5. ax25 digipeat [0|112]

4ith argument, set the mode to be used by the digipeater

    0 = Digipeater Off
    1 = Normal Digipeating
    2 = Digipeating with autorouting to destination calls (default) ithout

argument, display the current digipeater setting. .9.6. **ax25 flush**

Tears out the heard stations list.

.9.7. **ax25 heard [<iface>]**

thout argument, display the heard list on all active interfaces. xzmum of the
last 40 callsigns are displayed, the last heard   A
e time since last hearing each station is also displyedrd is first.

With argument, only show stations heard on the given interface. **1.9.8.**

ax25 kick <axcb>

Forces timeout of the ax25 T1 (retransmission timer) on the given connection control block.

Set the maximum number of frames that can be outstanding (unacknowledged) at any one time. The range is 1..7. Note that WNS03 will dynamically adjust the maxframe value according to performance of the link. The default is a maxframe of 2.

Without argument, show the default initial maxframe.

1.9.10. ax25 mycall [<callsign>]

Set the callsign to be used by the system. Without argument, just display the current setting.

Note that this command MUST be used BEFORE any ax25 $_{type}$ interfaces can be attached and it cannot be changed after startup.

Set the maximum number of data bytes that can be sent in an I .... frame. The default is 256 bytes. The range is 1..256.

Without argument, just display the current setting.

Set the poll threshold. With short I-frames, it is often more efficient to resend the I-frame rather than poll (send a REJ or RR frame). If the unacknowledged I-frame has a length greater than "pthresh", the system will poll instead. The deafult is 64 bytes with a range of 1..256.

Without argument, display the current poll threshold.

1.9.13. **ax25 reset <axcb>**

Immediately kill the connection at the given control block. This may result in lost packets and is often used for clearing "stuck" connections.

1.9.14. ax25 retry [<retries>]

Set the number of retries. The default is 8 with a range of 0 (infinite) to 256.

Without argument, display the number of retries.

1.9.15. ax25 route

Display and set information used by the AX.25 autorouter. This command on its own will give a summary of the numbers of routes known for each interface. The default interface is marked with an asterisk. See the "ax25 route add" command for details about setting the default interface.

1.9.15.1. ax25 route add <iface> default

Marks <iface> as the default interface. It is very much recommended that you set this. For example, if you have set "144" as the default interface then typing "connect gb7zz-5", where 8B7ZZ-5 is not in the route list already, will use 144 as the interface to attempt connection on.

1.9.15.2. ax25 route add [permanent] <iface> <callsign> [<digi1>...<digi7>]

Add the given callsign and path to the AX.25 route list. If the argument "permanent" is included (typed in FULL), that route will be marked as being permanent (much like locking a NET/ROM route in TheNet). Upto it optional digipeaters maybe included. Note that the word VIA is not needed in the digi path.

Note that in case where digis are present, the router will assume that you have a path to each of the intermediate calls via the previous digi. An example (if my call is g6dhu)

ax25 route add 432 gb7zz-5 g4otj-2 g4wrw-4 g4wub-5 will

result in the following decomposed routes

g6dhu TO g4otj-2
g6dhu TO g4wrw-4 via g4otj-2
g6dhu TO g4wub-5 via g4otj-2 g4wrw-4
g6dhu TO gb7zz-5 via g4otj-2 g4wrw-4 g4wub-5

since the autorouter can assume that each of the digi's specified are also reachable by the preceding one!

1.9.15.3. ax25 route hold [<days>]

Specifiy the time after which routes in the routing list are dropped if they have no longer been used.

Without argument, display the current hold time.

1.9.15.4. ax25 route list [<call> [<call>]..]

Display the routing information to the callsign(s) specified.

Without argument, display the complete routing table. **1.9.15.5.**

ax25 route save [<minutes>]

Set the interval between saves of the AX.25 routing table to disk (file axroute.dat). The default save interval is 10 seconds, with a range of 10..120 seconds.

Without argument, display the current save interval.

1.9.15.6. ax25 route status

Show the number of known routes on each interface. The default interface (see the "ax25 route add <iface> default" command) is shown with a "*".

1.9.16. ax25 status C<axcb>3

Shows the complete information for the AX.25 connection owned by the given AX.25 control block.

Without argument, display a summary for all active AX.25 connections. **1.9.17.**

ax25 t1 [<sec>]

Set the value of the AX.25 T1 (Retransmission) timer. The default is 10 seconds, with a range of 1..30 seconds.

Without argument, display the current setting of the T1 timer. **1.9.18.**

ax25 t2 [<sec>]

Set the value of the AX.25 T2 (Acknowledgement Delay) timer. The default is 2 seconds, with a range of 1..t1/2.

Without argument, display the current setting of the T2 timer.

1.9.19. ax25 t3 [<sec>]

Set the value of the AX.25 T3 (Link Redundancy) timer. The default is 900
seconds, with a range of 1..3600.

Without argument, display the current setting of the T3 timer. **1.9.20.**

ax25 t4 [<sec>]

Set the value of the AX.25 T4 (Busy) timer. The default is 60 seconds, with a
range of 1..30*t1.

Without argument, display the current setting of the T4 timer. **1.9.21.**

ax25 t5 [<sec>]

Set the value of the AX.25 T5 (Frame Reassembly) timer. The default is 1 second,
with a range of 1..t2-1.
Without argument, display the current setting of the T4 timer.

If set to $_{yes,}$ an AX.25 connection on which there has been no activity for the
duration of the T3 timer, will be disconnected. If set to no, the connection
will be polled to check for activity. The default is yes.

1.9.23. ax25 window E<bytes>]

Set the maximum number of bytes in the receive queue over which the remote end
will be sent a RNR (Receiver Not Ready ie "I'm choking!") frame. The default is
2048 bytes with a range of 1..32767 bytes.

Without argument, display the current AX.25 window. **1.10.**

bbs

Start a connection to the local mailbox.

1.11.   bell [<0..10>]

Sets the number of times the connect bell will be rung if someone [types] "(c)hat" in
the mailbox or connects to your TTYlink port (TOP port 87).

The connect bell only sounds if the "attended" flag is set on. **1.12.**

cd [<directory>]

Change to the directory given. Without argument, show the current working
directory.

1.13. **chat <hostname>**

Connect to the chat (TTYlink) port of the specified host. Uses TCP port number 87.

1.14. **close** [<session_number>]

Disconnect the given session (IP, NET/ROM 0r AX.25). Without argument, disconnect the current session (the one marked with the "*" in the output from the "session" command).

1.15. **connect [<iface>] <callsign> [<digipeater1>.. <digipeater7>]**

Start a connection to the given destination using the AX.25 Protocol. Up to 7 optional digipeaters can be specified.

The interface and digipeaters can be omitted if the route is known to the AX.25 autorouter (see the "ax25 route add" command).

If no interface is given and the destination callsign and path are NOT in the autorouter list, the connect attempt is made on the default interface ie that set by the "ax25 route add <iface> default" command. The given callsign and path are also added to the autorouter list.

1.16. **delete <filename>**

Delete the given file in the current directory (se the "cd" command). **1.17.**

detach <iface>

Detach the given interface from WNOS. It can no longer be used and all references to it in tables show "null".

1.18. **dir [<directory_name>]**

Displays a listing of files in the given directory. Without argument, give a listing of files in the current directory (see the "cd" command).

1.19. **domain....**

Display and set information about the Domain Name Service.

1.19.1. **domain add <server_name> [<port>]**

Add the given server to the list of known domain name servers. An optional port number (UDP port) on which that server listens for queries can also be specified.

Fetch domain file and routing information from the given server. The default file name to save as id DOMAIN.TXT but can be changed by specifying the optional filename argument.

1.19.3. **domain dfile [<filename>]**

Set the path and filename of the local domain file. Default path is the WNOS "root" and filename is DOMAIN.TXT.

Remove the given server from the list of known Domain Name servers. Optionally specify the port number used to direct queries at the given server.

1.19.5. domain list

List all known Domain Name servers and statistics such as number of queries sent, number returned etc.

1.19.6. domain load E<filename>3

Load the specified domain file (default DOMAIN.TXT) into memory. !Improves response times but eats memory!.

1.19.7. **domain loopback Eyeslno]**

Yes will force domain name queries to be directed to your own server. The default is NO. Without argument, display the current loopback setting.

Query the given server and lookup the record under the given name and record $_{type}$ (eg CNAME, A, MX etc).

1.19.9. **domain retries [{retries>]**

Set the number of times to try for a $_{query}$ before giving up. The default is to try only once with a range of 0..10.

Without argument, display the current domain retry setting.

1.19.10. domain save [<filename>]

Saves the currently loaded domain file under the optionally given filename
(default DOMAIN.NEW).

1.19.11. domain suffix [<suffix>]

Append the given suffix to domain names to make them Fully Qualified Domain
Names when searching for the corresponding address. The recommended setting is

ampr.org. (Note the trailing ".")

1.19.12. **domain timeout [<seconds>]**

Set the timeout on waiting for responses to domain queries. The default is 60
with a range of 15..600.

1.19~13. domain trace [yes|no]

If $_{yes,}$ trace (to the console) all domain server activity. The default is no.

1.19.14. domain verbose [yes|no]

Not Implemented.

1.20. echo Erefuse!accept]

Set method of character echo on Telnet connections. Default is refuse. 1.21.

eol [standard|null]

Set Telnet's end-of-line behaviour when in "will echo" mode. Default is
"standard".

1.22. **escape [<character>]**

Set character that returns to Command Mode. Default is Control - [(ESCape).

1.23. exit

~uit WNOS.

1.24. **finger** C<name>M<hostname>

Interrogate the finger server at the given remote host. The finger server ^{typically} returns station information at the remote machine. If no name is given, the remote server will return a list of known users.

1.25. **ftp <hostname>**

Start a session using the FTP (File Transfer Protocol). Automatic login at the remote host is available (see the "nos.rc" file).

Commands available at the ftp> prompt are....

1.25.1. **cd <remote_directory>|..**

Change to the given directory or to the parent of the current working directory.

Delete the named file.

List the files in the current directory optionally saving the listing in the local file given. The list is a 'long' listing and gives all file information (name size etc).

1.25.4. **get [<remote_filename> [<filename>]]**

Get the given file. If the second argument is given, give the file transferred that name locally.

As the 'dir' command except gives a 'short' listing of filenames only.

Multiple Get. Get more than one file in a single transfer request. The 'wildcards' "*" (match any string in a filename) and "?" (match any single character in a filename) are allowed to be used.

1.25.7. **mkdir <remote_directory_name>**

Create a directory on the remote machine (if no path given, this creates a sub-directory within the current working directory).

Send the named local files to the remote machine in one request. **1.25.9.**

put <local_filename> E<remote_filename>3

Send the given file to the remote machine. If a second argument is given, this is the name of the file as stored on the remote machine.

1.25.10. quit

Logoff the remote file transfer service and close the session.

Delete the given directory on the remote machine. (If no path is given, the directory is assumed to be a sub-directory of the current working directory).

1.25.12. $_{type}$ **[a|i|l <byte_size>]**

Set the $_{type}$ of file for a put/get/mput or mget. $_{Type}$ a = ASCII (plain text). ^{Type} i = Image (A binary file with default wordsize of 8 bits). ^{Type} l is also a binary file but has the given logical byte size.

Given without argument, the "type" command just reports the current file transfer $_{type.}$

1.25.13. **verbose** [011|213]

Be more detailed about what is $_{going}$ on during a transfer.   = be quiet!.. 3 = show as much detail as possible.

1.26. help

Give a list of the top-level commands supported by the program. 1.27.

hostname <name>

Set the local hostname. This is not used for anything apart from Greetings texts sent to other hosts. Without argument, just show the current hostname.

1.28.   icmp

Show information about ICMP (the Internet Control Message Protocol).

1.28.1. icmp echo EyesIno]

Setting this command to "yes" allows the system to handle asynchronous ICMP Echo
Reply packets (otherwise known as ping replies). This command must be switched on to
allow the use of "one-shot" pings to other hosts.

Without argument, just display the setting of the command. 1.28.2.

icmp status

Display ICMP statistics.

1.28.3. **icmp trace [yes|no]**

Setting this command to "yes" will allow the printing of ICMP error messages to
the console. Without argument, just display the flag's value.

1.29. **ifconfig**

Display and set information pertaining to the currently attached interfaces.

1.29.1.   ifconfig [<iface>]

Display the interface configuration for the named interface (or all if no
interface given).

Set the Internet broadcast address to be used on the given interface.

1.29.3.   **ifconfig   <iface>   encapsulation
<none|ax25|slfp|ethernet|netrom|s1fp>

Set the packet encapsulation to be used on the given interface. **1.29.4.**

ifconfig <iface_in> forward <iface_out>

Forward all packets arriving on the incoming <iface_in> interface to the outgoing
interface <iface_out>.

Set the Internet Address to be used on the given interface.

1.29.6. ifconfig <iface> linkaddress <callsign>

Set the Link callsign to be used on a IP ..... IP interface.

1.29.7. **ifconfig <iface> mtu <bytes>**

Set the interface MTU (Maximum Transmission Unit) in bytes.

Set the Network Masking Address used on a Internet $_{type}$ interface. Set the

size of the interface receive buffer.

1.30.   ip

Display or set information used by the Internet Protocol (IP). **1.30.1.**

ip address E<address>3

Set the Internet address of this machine. Without argument, display the IP
address.

1.30.2. ip rtimer [<seconds>]

Set the IP Packet Reassembly timer. The default is 30 seconds with a range of
$0..2^{15}$. Without argument, display the current setting.

1.30.3. ip status

Show IP statistics for this machine.

1.30.4. ip ttl [<hops>]

Set the IP Time To Live (TTL) counter. Each IP switch forwarding an IP packet
will decrement the TTL counter as it passes through. If the counter reaches
zero, the packet is discarded. It is used as safety measure to prevent packets
from continuously circulating a network. The default is 255 hops with a range of
0..255.

1.31. **isat [yes|no]**

Selects finer clock tolerance on i386 processor machines. Default is off.

1.32. kick [<socket_number>]

Forces a retransmission timeout on the given session (default session is the current one if none given).

1.33. **log [<filename>|off]**

If a filename is given, start logging to the given file. The argument "off" closes the current logfile and stops logging. Without argument, display the current logging setting (filename).

1.34. **lzw mOde [compact|fast]**

Set the data compression mode. The compact option (the default) results in more efficient compression but takes up much CPU time. The fast option on the other hand is quicker but results in "looser" compression. It is recommended that slow machines/XT's use the fast option. Setting the mode will not affect interoperability with other nodes using compresssion.

1.35. **lzw bits [9..16]**

Set the number of code bits used in compression. A 9 bit code word results in loose compression (the default) whereas 16 gives tighter compression. As with the "lzw mode" command, slow machines are recommended to use the default number of bits.

1.36. mail

Shell out and start up the mailer program. The default is BM.EXE in the current directory. (See also the DOS "MAILER" environment variable).

1.37. mbox

Display or set information used by the local mailbox (bbs).

1.37.1. mbox attend Eyes:no]

Allow mailbox users to connect to the system operator. Default is no.

1.37.2. mbox kick

Start forwarding any pending AX.25/BBS mail.

1.37.3. mbox log [yes|no]

Log all mailbox activity to the file spool\node.log if enabled. Default is off.

Set the maximum number of messages allowed in any one mail "area". The default is 200 with a range of 0..200.

1.37.5. mbox motd [<text>]

Specify some extra connect text to be sent out to users connecting to the mailbox. Without argument, display the current text.

1.37.6. mbox more [yes|no]

If $_{yes}$, then stop after every $_{page}$ of output whilst reading mail messages via telnet connections. The default is not to "page" output.

1.37.7. **mbox status**

Show information about the mailbox.

1.37.8. **mbox timer E<seconds>3**

Set the time interval between forwarding *AX.25/BBS* mail. The default interval is 0 (don't forward at all). Without argument, display the current forwarding interval.

1.37.9. **mbox tiptimeout [<seconds>]**

Set the timeout on connections to the mailbox using tip. The default is 180 seconds.

1.37.10. mbox user

Show information about users connected to the mailbox.

1.38. **mem**

Set and display information concerned with memory useage and allocation. 1.38.1.

mem freelist
Display a list of free memory areas.

*1.38.2. mem garbage **[yes]***

Force a garbage collection.

Set the size of the interrupt buffers to be used. The default is 2048 bytes with a range of 1..32767. Without argument, display the current size of the interrupt buffers.

1.38.4. mem nibufs [<number>]

Set the number of interrupt buffers to be used by the program. The default is to use 7.

1.38.5. mem reboot Eyes:no]

If set to $_{yes,}$ when the program free memory ("coreleft" as shown by the "mem status" command) drops below the limit set by the "mem thresh" command, the program will exit and reboot the machine.

*1.38.6. **mem** sizes*

Display a list of allocated memory blocks and their sizes.

*1.38.7. **mem** status*

Display general memory statistics (eg free memory left, number of garbage collections etc).

*1.38.8. **mem** thresh*

Set the threshold for free memory below which the program will refuse any further incoming connect requests (and reboot if "mem reboot" is set to "yes").

*1.38.9. **mem** usedlist*

Displays a list of allocated (in use) memory areas.

Create a new subdirectory.

1.40. mode <host> [datagram!vc|ipcam] <path>

Set the connection method and path used to reach the specified, directly reachable host. Connection methods are

        datagram - Use AX.25 UI (broadcast) frames with a PID of "IP"
    vc   - Use a normal AX.25 connection with a PID of "IP"
    ipcam   - For use in networks that support just PID F0 (text
                    only/no upper protocol)

If just the hostname is given, the mode (and path) used to reach that host is reported.

The "ipcam" mode is useful in networks such as TheNet where the Level 3 processor has been disabled and IP frames can therefore be passed across such nodes using a "text only" PID of F0.

1.41. more <filename>

View the given file (in a separate session) a page at a time. The "space bar" moves down a page and "q" quits and closes the session. **1.42. motd [<text>]**

Set the "Message Of The Day" text, sent out to all connecting users. Without argument, just display the current motd.

1.43. multitask [yes|no]

If yes, WNOS will continue to process incoming packets in the background whilst shelled out to DOS.

1.44. netrom ...

Display and set information used by the NET/ROM network protocol. **1.44.1.**

netrom acktime [<milliseconds>]

Set the NET/ROM acknowledge timer. The default is 3000 (3 seconds). This I mer is like the 12 timer in AX.25 (see "ax25 t2").

Force a nodes broadcast on the given interface and to the given destination callsign (default "NODES").

Note that the autoexec.nos file should set the default destination to be used. In other words, include the line
      netrom bcnodes 144 NODES

at the bottom of your auotexec.nos file (Changing the interface name as appropriate).

1.44.3. **netrom connect** <node_callsign|node_alias>

Make a connection to the given node using the NET/ROM protocol. You must, of course, have a route to the given node.

Set the NET/ROM Choke timer. This timer determines the length of time to wait before breaking a choked connection. The default is 180000 (15 minutes).

If $_{yes,}$ and Level-4 retries occur on a NET/ROM link, the quality of that link is slowly reduced. If one of the alternative routes to that node then has a better $_{quality,}$ that route is tried instead.

If no, the normal NET/ROM action takes place. That is, alternative routes are only tried if the link layer to that node fails and no reduction in node quality takes place.

The default is "yes".

1.44.6. **netrom interface <iface> <alias> <quality>**

Set the alias and quality for the interface <iface> configured for use as a NET/ROM node.

<alias> is the usual string of upto 6 characters and in the UK it is recommended that IP nodes carry a unique alias denoting their IP address subnet numbers in hexadecimal. For example, my IP address is 44.131.20.3, the important part is 20.3 (all UK users are 44.131). Then convert the 20 and the 3 to hex (14 and 03 respectively) and construct the alias

    IP1403

quality> is the default quality to assign to incoming   NET /ROM broadcasts.

1.44.7. **netrom irtt [<seconds}]**

Set the IRTT Initial Round Trip Time to be used for NET/ROM connections. Without argument, display the current setting.

1.44.8. netrom kick <nrcb>

Kick (force a retransmission timeout) on the connection owned by the given NET/ROM Control Block (nrcb).

1.44.9. netrom minquality [<1..255>]

Set the minimum quality for a node to be included' in the local netrom routing table.

Display the list of nodes that are the only ones used in determining NET/ROM routing.

1.44.10.1.   netrom   nodefilter   add <neighbour_callsign>   **<iface> [<quality>]**

Add the specified node (directly reachable) to the nodefilter list via the given interface. An optional quality can be specified and will set the quality for broadcasts received from that node. The default value of quality if not specified will be that set in the "netrom interface" command.

1.44.10.2. netrom nodefilter drop <neighbour_node> **<iface>** Remove

the given node from the nodefilter list. Set the mode for nodes in

the node filter list.

     none   - No Filtering takes place (Ignore)
     accept - Only nodes IN the nodefilter list are listened to. reject
             - The only nodes NOT listened to are those in the nodefilter
             list.

The default mode is accept.

1.44.11. netrom nodetimer [<seconds>]

Set the interval between broadcasts of the local NET/ROM routing table. Without argument, just display the current setting.

Set the interval between "ageing" each entry in the local routing table. Nodes having an obsolescence count of 0 are dropped from the table. Without argument, just display the current setting.

1.44.13. netrom promiscuous [yes!no]

If ^{yes}, the local node will listen to all routing table broadcasts irrespective of the quality of that node. The default is off.

1.44.14. netrom qlimit [<frames>]

Set the number of bytes allowed in the NET/ROM receiver queue at any one time. If more arrive, the sending node is "choked" (asked to stop sending for a while). The default is 2048 bytes.

1.44.15. netrom reset <nrcb>

Reset (kill) the NET/ROM connection owned by the given NET/ROM Control Block (nrcb).

1.44.16. netrom retries [<tries>]

Set the number of times the node will attempt to connect to another node. The default is to try 10 times.

1.44.17. netrom route

List all known NET/ROM nodes (callsigns and aliases) to which a route exists.

1.44.17.1. netrom route add <alias> <node_call> <iface> <quality>
<neighbour_node>

Add a route to the given node, at the quality specified via the specified neighbouring node.

1.44.17.2. **netrom route drop <node_call>** <neighbour_node> **<iface>** Remove

the given node from the local NET/ROM routing table. **1.44.17.3. netrom**

route info <node_callsign>

Display the NET/ROM routing information for the given node. The information displayed is Quality, Obsolescence count, Interface and neighbour node. Manually entered (Permanent) routes have a Quality of
 p.

1.44.18. netrom status

Display information about users connected to this node via the NET/ROM network.

1.44.19. netrom tcp

List those nodes known locally that are likely to be other Internet nodes (ones with the string TOP, NOS or IP ₍appearing₎ in the alias).

1.44.20. netrom ttl [<hops>]

Set the Time-To-Live count for all NET/ROM frames originating from this node. Without argument, display the current setting.

1.44.21. netrom user [<callsign>]

Set the callsign to be used when making an outgoing connection to another node using the NET/ROM protocol (see "netrom connect"). Without argument, just display the current callsign.

1.44.22. netrom verbose Eyesino]

If ₍yes,₎ then broadcast all local routing information at each "nodetimer" tick. Otherwise, just broadcast the existance of the local node. It is recommended that users wishing to be part of the NET/ROM network, but only as an "end node", should set "netrom verbose" to "no".

1.44.23. netrom window [<frames>]

Set the NET/ROM window size, which is negotiated by nodes on connection. The default is 4 frames.

1.45.   nntp ...

Display or set information pertaining to NNTP (Network News Transfer Protocol).

1.45.1. nntp active

Show active newsgroups and articles within each group.

1.45.2. nntp add

Add the specified NWTP server to the list of servers used to poll for news.

1.45.3. nntp drop

Remove the given NNTP server from the list of known news servers.

1.45.4. nntp dump <newsgroup>

Dump the given newsgroup into a file (in spool\mail\) suitable for reading with BM or PCelm.

1.45.5. nntp kick

1.45.6. nntp list

List the known NNTP servers to get news from.

1.45.7. nntp post

Post an article to a newsgroup (interactive).

1.45.8. nntp profile fullname [<text>]

Set your name (appended to your From: article header).

1.45.9. nntp profile organ [<text>]

Specify the text to be included as an "Organization:" header in news articles posted locally.

1.45.10. nntp profile _{reply} [<user@host>]

Set the path for inclusion in the "Reply-To:" article header. Note that user@host *must* be delimited by angle brackets as above.

1.45.11. nntp profile sig [<filename>]

Specify the location of the "signature" file to be appended to all locally posted news articles.

Send control string to the given interface (usually used to set up a TNC in KISS mode at startup).

1.47. ping <host> [<length> [<interval> [<incflag>]]]

Send an ICMP "Echo Request" (ping) packet to the given host. Pings are used primarily to measure the round trip time to other IP nodes. The optional arguments do the following

        <length>   - Send a text portion of length <length> bytes in the
                   message.
        <interval> - Repeatedly _{ping} the given host every <interval>

                   seconds. This starts a session which can be entered and exited
                   just like any other.
        <incflag> - Increment the destination address at each attempt. This
                   useful for checking how many hosts are up in a given
                   cluster.

1.48. pop

Display and set information used by the Post Office Protocol (POP). POP is a "mail collection" service. Your mail is stored at a remote host (the mailhost) until you request it be sent to you using POP. It is then stored locally on your machine just as normal mail does.

1.48.1. _{pop} mailbox [<file>]

Specify the name of the your mailbox file at the POP host.

1.48.2. _{pop}**mailhost [<host>]**

The domain name of the machine that holds your mail for you. **1.48.3.**

_{pop}**kick**

Force a poll of the mailhost to see if new mail has arrived for collection.

1.48.4. _{pop}**quiet [01112]**

Succesfully collected mail messages are notified with beep and console message (0), no beep but message (1) and no notification (2). The default is O.

1.48.5. _{pop}**timer [<seconds>]**

Set the interval between which the mailhost is polled for new mail. **1.48.6.**

_{pop}**userdata <username> <password>**

Set your username and password for accessing POP at the mailhost. NB: These are defined in the file POPUSERS at the mailhost.

1.49. ps

Show information about all processes on the system.

1.50. pwd [<diruame>]

Change the current working directory. Without argument, just show the current working directory.

1.51. **record EC<session>3 <filename>loff3**

^{Copy} all input and output from the given session into the given file. If no session is given, the default one is assumed. Record can be switched off at any time by using the "record <session> off" or "record off" commands.

    1.52.   **remote [-p <port>] [-k <key>] [-a <kick_addr>3   <address> exit|reset|kick**

Remote control the host at the given address using the User Datagram Protocol (UDP). The remote host can have connections reset, kicked or the program stopped.

1.53. **rename <old_filename> <new_fiiename>**

Rename a file.

1.54. reset [<session_number>3

Reset (kill) the given session, or the current one if none is specified. Note that this does not "gracefully" disconnect a session and is primarily used to kill connections to crashed hosts etc.

1.55. **resetping <host>**

Stop the setping session to the given host.

Delete the given sub-directory.

    1.57. route ....

Display and set routing information used by the Internet Protocol (IP). **1.57.1.**

route add <host>[/bits] <iface> [<gateway_host> [<metric>]]

Add an IP route to the given host via the given interface. The route can be via an optional IP switch (gateway). The optional metric is redundant unless routing protocols are in use (RIP, RSPF etc).

1.57.2.   **route   addprivate   <host>[/bits]   <iface>   [<ga±eway_host>**
[<metric>]]

As "route add ..." except that route will be marked as private and not
propagated through any routing protocol.

1.57.3. **route drop <host> <iface>**

Remove the specified host from the IP routing table.

1.57.4. **route lookup <host>**

Display the route to the given host.

1.57.5. route save [<minutes>]

Display or set the interval at which IP routing information will be saved to
disk (file iproute.dat).

1.58. **session** [<oumber>]

Without argument, display a list of all currently active sessions together with
information such as the size of send and receive queues and the $_{type}$ of session
(TOP, AX25 etc). The current default session Cie the one displayed if "RETURN" is
pressed) is shown with an asterisk "*" at the start of its entry.

1.59. setping [<host> <interval>]

Send an ICMP "Echo Request" (ping) packet to the given host every <interval>
seconds. This is useful when operating in an RSPF controlled IP network to
inform RSPF gateways of your existance.

Without argument, display the routing quality table for each setping host.

1.60. shell

Start an interactive DOS session. Synonym for the "!" command. **1.61.**

          smtp ...

Display and set information used by SMTP (Simple Mail Transfer Protocol) used to
send electronic mail between IP nodes.

1.61.1. smtp batch [yes|no]

If yes, send as many SMTP commands in one frame as possible. Otherwise, always send one command at a time and wait for the response. Please note that this command *is not* compatible if you send mail using SMTP to systems running MSYS - tell the MSYS operator to start running something decent! If you operate with MSYS nodes set "smtp batch" to "no" which is the default.

1.61.2. smtp gateway E<host>3

Set the host to send mail to if the destination address is not locally known or resolveable.

1.61.3. smtp kick

Start the SMTP server sending any pending outgoing mail.

1.61.4. smtp kill <job_humber>

Kill a pending mail job (see "smtp list" for getting the job number).

1.61.5. smtp list

List information about all pending mail jobs. These are indexed by Job-ID (a unique number for each job).

1.61.6. smtp maxclients [<clients>]

Set the maximum number of outgoing SMTP connections allowed at any one time. The default is 10.

1.61.7. smtp mode Eroutelqueue]

Set the SMTP server mode. If route, all mail jobs are queued in the spool\mqueue\ directory and sent out. If queue, mail jobs are not sent but are queued for delivery in the spool\rqueue\ directory (for other mail sending programs to access). The default is to route mail.

1.61.8. smtp quiet [011|2]

Notify incoming mail deliveries with beep and message (0), no beep but message (1) and nothing (2). The default is O.

1.61.9. smtp recvlzw [yes|no]

Controls whether or not WNOS will accept compressed mail from other nodes. The default is to accept incoming compressed mail.

1.61.10. smtp sendlzw [yes|no]

Controls whether or not WNOS will send compressed mail to other nodes. The default is to compress outgoing mail if the other node can accept it.

1.61.11. smtp timer E<seconds>3

Set the interval between sending out pending mail. Default is 0 (don't deliver mail).

1.61.12. **smtp trace [011]**

Trace SMTP "conversations" between hosts. The default is 0 (don't trace).

1.62. socket E<number>3

Display information about the process/connection using the given socket. Without argument, the command lists all active sockets and ^{type} information.

1.63. **source <filename>**

Read in and execute the given command file.

1.64. start <server_name>

Start the given server. Use "start ?" to list the available servers. **1.65.**

status

Display program startup and run time information.

1.66. **stop <server_name>**

Stop the named server.

1.67. sysop <00001..99999>

Set the $_{sysop}$ password key for remote access from the mailbox "@" command.

1.68. tail <filename>

Display the last few lines of the given file.

1.69.   tcp ..~

Display and set information used by TCP (Transmission Control Protocol). **1.69.1.**

tcp close <tcb>

Close (disconnect) the stream owned by the given TOP Control Block (tcb).

1.69.2. tcp irtt [<milliseconds>]

Set the Initial Round Trip Time used to time TCP retransmissions (this is later
set dynamically by measurement as the connection progresses). The default is
5000 (5 seconds) with a range of 0..2^15.

1.69.3. tcp kick <tcb>

Kick (force a retransmission timeout) of the stream owned by the given TCP
control block.

1.69.4. **tcp mss [<bytes>]**

 at the TCP Maximum Segment Size (MSS). The default is 512 bytes with range
of 0..65535.

1.69.5. tcp reset <tcb>

Reset (kill) the TCP stream owned by the given TCP control block. **1.69.6.**

tcp retry [<tries>]

Set the number of TOP retries before giving up on a connection attempt. A value
of 0 disables this feature, the default if 5 tries with a range of 0..255.

1.69.7. tcp rtt <tcb> <milliseconds>

Set the (normally dynamically adjusted) Round Trip Time (RTT)   for the
TCP stream woned by the given TCP control block.

1.69.8. tcp status [<tcb>]

Without argument, display a summary of statistics for active TCP streams.

With the address of a TCP control block, show detailed information about that stream.

1.69.9. tcp syndata [yes|no]

If _{yes,} TCP will not wait for the formal 3-way handshaking during the connection phase of a TOP conversation and is allowed to send data with the SYN "connect request" frame.

If no, TCP waits for the normal 3-way startup handshake before sending any data.

Please note that if you talk to MSYS nodes, set this command to "no"!

1.69.10. tcp trace [0|1]

Show detailed information about the TCP server activity if set to 1.

1.69.11. tcp window [<bytes>]

Set the receiver TCP window size. The default is 2048 with a range of 0..65535.

1.70. telnet <host> [<port>]

Start a telnet connection to the given host (and using the optional port number at the remote host). The default port is the telnet port (23). The remote server will greet you and you will be required to login before access to the remote mailbox is granted.

Mailbox commands are

1.70.1.   ?

List commands

1.70.2. @

Start _{sysop} mode

1.70.3. <CR> (Return)

Read current mail message in current area

1.70.4. CTRL-X

Escape back to mailbox command level

1.70.5. aErea] [<area>|<callsign>3
Without argument, show list of available mail areas, otherwise make the given area the default area.

1.70.6. b[ye]
L· gaff and disconnect.

1.70.7. c[hat]

Chat to _{sysop} (if "attended").

1.70.8. conv[ers] (may change to cl[uster])

Connect to the local convers node.

1.70.9. co[nnect] [<iface>] <callsign> [<digi1>..<digi7>]

With no interface given, autoconnect to the given destination. Otherwise make a connection to the given destination using the optional digipeater list over the given interface.

Send the given ASCII file.

UUencode the given binary file and send it.

Without argument, show the default escape character, otherwise set a new one.

Query the local finger server for information on local users.

1.70.14. h[elp] [command]

Without argument, display a message about the useage of the Help command
otherwise, send detailed help on the specified command.

1.70.15.   i[nfo]

Show information about the local system.

Delete the given mail message numbers.

1.70.17. l[ist] [{number> [<number>...]]

Display mail headers of the specified messages (all if none given) in the
default message area.

1.70.18. ll[ast] [<number> [<number>...]]

Show the last (specified) message headers in the current message area. **1.70.19.**

m[heard] [<iface>]

Without argument, display the monitor heard list for all interfaces. Otherwise
just list those stations heard on the given interface.

Without argument, show all locally known NET/ROM nodes. Adding the argument
"tcp" displays only those NET/ROM nodes which are likely to be IP nodes (aliases
containing either TOP, IP or NOS).

Speicifying a node callsign or alias as argument lists all known routing
information to that node.

1.70.21. nc[onnect] **<callsign>!<alias**

Make a NET/ROM connection to the given node.

1.70.22. pEath] [<destination_callsign>]

Without argument, displays   all   known   auto-router   destinations.
Specifiying a callsign shows the path information for that destination.

1.70.23. **os**

Outputs the same as the internal "status" command. Useful for remote sysops.

1.70.24. q[uit] Logoff

and disconnect.

Read the given messages from the current area.

1.70.26. s[end][r|b|f] <callsigm>[@<host>]

Send mail to the given user.

1.70.27. t[elnet] <host>

Connect to another IP node using telnet.

Upload the given ASCII! text file to the public file area.

1.70.29. uEser]

Display information about all currently connected users.

1.70.30. Ew3hat

Gives a directory listing of the public file area.

1.71. thirdparty [yes|no]

If $_{yes,}$ allow local handling of third $_{party}$ mail. The default is to allow third $_{party}$ mail.

1.72. **tip <iface>**

Start a raw ASCII session across the given interface. Kill the session with a "reset".

Enable the TRACE screen   (Press F9 to select   it) and   trace   packet
activity.   Trace   information   can   be   dumped to a named file   (and the
 printer (LPT1)).   The trace flags are

        B ‑> 0 = Trace all packets, 1 = Trace only those with your address
        T -> 0 = Headers only,   1 = Data in ASCII, 2 = ASCII & Hex Data
        I -> 0 = No incoming packets,   1 = Incoming packets
        O -> 0 = No outgoing packets,   1 = Outgoing packets

1.74. udp status

Show statistics about User Datagram Protocol (UN') frames handled. **1.75.**

upload CE<session_number] **<filename>:off]**

Send the contents of the given file out on the given session as if it had been
typed at the console. Switch uploading off by specifying the "off" keyword.

1.76. watch [yes|no]

If yes, enable the software stopwatch flags (may no longer be useable). **1.77. wrap**

[<line_length>]

Set the maximum line length, after which a further space and word will
automatically wrap the line, with the first portion being sent out
automatically.

Send the specified text string out on all given sockets. **2. Bug**

Reports

Please send any bug reports on this document (errors, omissions etc) and I will
fix it in the next release.

I can be reached in the following way

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