

ARKANSAS PACKET NETWORK NODEOP GUIDE

This is a list with explanations of the X1J4 commands that are used by node operators or SYSOPs in the Arkansas Packet Network (APN). There are more commands, but most are never used and are not included here, so as to simplify the guide.

This manual IS NOT intended for USERS! A separate manual can be made available with those commands that are accessible by users, and containing more detailed explanations.

ALIAS

The ALIAS command allows the node's alias to be changed. The syntax is :

```
ALIAS [ * | new-alias ]
```

If no parameter is given, or if the user is not SYSOP or MANAGER, the current alias is displayed. If the alias is deemed to be a valid alias, the node's alias is changed to the new one entered. If the sysop gives the parameter of '*', the node's alias is cleared.

BBS

The syntax of the command is :

```
BBS [ * | ? | callsign ]
```

With no parameter, the command connects to a station previously specified by the sysop. Setting the BBS destination is done by the use of the BBS command with a callsign as a second parameter. Setting the BBS to allow this may only be done by a sysop. The '*' option may also only be executed by the sysop, this command clears a previously specified BBS.

The '?' option (or any text if not sysop), prints out the current BBS station setting.

If no BBS is set, the command issues an error message if it is invoked with no other parameters.

The idea of this command is that, like with the 'BBS' command of the 'BPQ software, a user may connect to the local BBS from the node.

BTEXT

The BTEXT command sets or displays the additional beacon text sent along with the beacon packets.

The syntax of the command is :

```
BTEXT [ * | message ]
```

With no parameter, the current message is displayed. If the user is also a sysop, and if text follows the command, that text is added to the current beacon text. If the message starts with a '*', the beacon text message is deleted. Hence, to clear the message, type the command 'btext *'.

BYE or QUIT

There are no parameters to these commands. When entered, they terminate the session. Both commands do the same thing.

CALIBRATE

This command allows remote calibration checks of the transmitter deviation. Its syntax is

```
CALIBRATE period [ toggle ]
```

The period (1 to 60 seconds), is the time for which the transmitter will key up for with constant tone. It is undefined as to which tone will be sent. If the second parameter is given, the node will toggle between the tones every [toggle] seconds. The toggle must be between 1 and [period] seconds. If a period is not given, the user is not sysop or manager, or if it is out of range, the command is ignored. Note - quite often it can appear that the node has locked up having failed to transmit the full calibrate period. In fact, this is usually the hardware PTT watchdog in the TNC. The node thinks it is still sending but the hardware timer has removed the PTT signal.

CONNECT

This command allows a station to connect to another station or node. That node does not have to be a neighbor node, but may be any other node in the network provided that node does show up when the NODE command is displayed.

```
CONNECT [callsign / alias]
```

CQ

This command allows a station to broadcast a CQ message from the node.

```
CQ [message]
```

CTEXT

The CTEXT command sets or displays a message sent to a user who connects to the node by uplinking to the node's alias.

The syntax of the command is :

```
CTEXT [ * | message ]
```

With no parameter, the current message is displayed. If the user is also a sysop, and if text follows the command, that text is added to the current connect text. If the message starts with a '*', the connect text message is deleted. Hence, to clear the message, type the command 'ctext *'.

A message is only sent if there is a ctext message set and if the relevant bit is set in the mode command parameter.

HELP

This command displays text that was burned into the chip that gives users a rudimentary explanation of user level commands.

```
HELP
```

HOST

The syntax of the command is :

```
HOST [ * | ? | callsign ]
```

This command is very similar to the 'BBS' command. It allows connection to a local host, BBS or other server. The difference however, is that as long as the TNC is not in crosslinked, and if a callsign is not set, the 'host' command connects to the local RS-232 port.

The idea of this command is that, like with the 'BBS' command of the 'BPQ software, a user may connect to the local BBS, another node or server from this node. For example, a local community mailbox.

INFO

This command displays an information message to the user.

```
INFO [ * | info text ]
```

If a sysop enters the command followed by a *, it will erase any previously sysop entered message. It cannot erase any message that was burned into the chip. If the sysop enters the command followed by text, that text will be displayed. If there is text permanently burned into the chip, it will be displayed after the permanent text.

LINKS

This command shows the current level 2 links to the node. Displayed one per line, the two callsigns are shown followed by the link state, port number and current retry count.

MHEARD

The TNC can be instructed to keep a list of the last 'nn' stations heard, where 'nn' is an integer between 1 and 100. It can also be disabled. The syntax of the command is :

```
MHEARD [ nn ]
```

The parameter is optional and only operates for the sysop. It sets the maximum length of the list. Setting to zero disables the function. The heard list uses free buffers for the list, so a large setting means less RAM for the node software.

The list is maintained as linked list, with the most recently heard station first. The display shows the number of packets heard from that station and the time since it was last heard, in hours minutes and seconds.

Every hour the list is checked for stations that have not been heard for 12 hours, and any such stations are removed from the list.

MODE

The following parameters may be configured :

- 1 The host mode
0 - RS-232 port standard. 1 - connected to device
- 2 The CWID send period
0 to 3600 0 disables it
- 3 The CWID keyer speed
4 to 10 30 to 12 WPM respectively
- 4 The port nodes broadcast control
0 - none 1 - radio port 2- RS-232 3 - both ports
- 5 The crosslink / kiss control
0 - standard crosslink 1,2,3 - various KISS modes
- 6 The Tx delay
10's of milliseconds 30 solid state, 45 for relays
- 7 The full duplex flag
0 - normal 1 - full duplex (we do not have any in APN)
- 8 The RS232 port node broadcast interval
0 - normal 600 - 10 minutes
- 9 The node broadcast algorithm
0 - off 2 - RS-232 1,3 - Not used
- 10 The beacon period
600 - 10 minutes 900 - 15 minutes 3600 - 1 hour
- 11 The 'connect' redirector (if user says 'Connect' only)
0 - Host 1 - BBS 2 - DXCluster
- 12 The 'help message' flags, case sensitivity, TALK 8 bit
0-255 add bits up as binary number (0-off, 1-on) APN:31
BIT FUNCTION
=====
- 0 y Whether the 'please wait, trying xxxx' operates
- 1 y Whether all commands appear in help for sysop
- 2 y Whether the 'goodbye' message is given
- 3 y Whether a welcome message is enabled (CTEXT)
- 4 y Whether nodes are shown as 'alias:callsign'
- 5 If set, TALK data is passed as 8 bit data rather
 then clearing the most significant bit
- 6 If set, node aliases are case sensitive
- 7 If set, enables the "*** LINKED to" interface
- 13 The 'hash' node broadcast port control
0 - passed 1 - RS-232 OK 2 - radio OK 3 - restricted
- 14 Whether the node will listen for the extra aliases
0 - none 1 - monitor for extra aliases
- 15 Whether remote disconnect causes reconnection to the switch
0 - disconnect 1 - come back to node
- 16 Control over 'slime trails'
Bit 0 if set hides slime trails in nodes list
Bit 1 if set causes slime trails to be ignored
- 17 Control over digipeating up/down links
Bit 0 set makes node to refuse digi'd L2 uplink
Bit 1 set, node refuses to allow digi downlinks

MODE & PARM command syntax

Both use the same syntax, which may be either of two types, the original TheNet 1.01 syntax (as used in versions previous to X-1J) or an 'offset & value' type.

The original syntax was, by way of example,

```
PARM { [ * | new_value ] [ * | new_value ] ..... }
```

so to set the 10th PARM (the L4 retries) to 1, the syntax would be :

```
PARM * * * * * * * * * 1
```

The equivalent new syntax command would be :

```
PARM / 10 1
```

The '/' command signifies that what follows is the parameter number followed by the new value. As for the old command syntax, the complete list of parameters is displayed. Setting the parameters may only be done by a Sysop. Note that BOTH command syntax's are supported - you can use whichever you prefer.

NODES

The entire contents of the node table routes may be obtained by the sysop or manager by the command

```
NODES * *
```

This will dump info on all nodes, one node per line, with the following format:

```
Alias:call  routel  route2  route3
```

where routel, route2 and route3 comprise the quality, obsolescence count and port followed by the neighbor callsign for each of the 3 route entries for that node. If any of the routes are in use, a chevron will be shown by that route.

The extended command is only for sysop use as it, like auditing and conferencing, causes the node to be a source of a significant amount of data (dumping a large number of node details can consume hundreds of buffers !!!). It is quite possible that used indiscriminately, it could cause a warmstart of the node. Be careful.

PARMS

The following parameters may be configured :

- 1 Maximum number of destination nodes in NODES table
typically 25, 50 or 100
- 2 Minimum quality for auto update APN: 100
- 3 HDLC (radio, port 0) default quality APN: 100
- 4 RS232 (crosslink, port 1) default quality
2 node stack: 255 3 node stack: 248
- 5 Initial value for obsolescence counter APN: 6
- 6 Minimum obsolescence for node broadcast APN: 5
- 7 Auto update broadcast interval (seconds) APN: 1800
- 8 Level 3 (network) Time To Live Initialiser APN: 10
- 9 Level 4 (transport) timeout (seconds) APN: 300
- 10 Level 4 (transport) retries APN: 2
- 11 Level 4 (transport) ack delay (seconds) APN: 6
- 12 Level 4 (transport) busy delay (seconds) APN: 180
- 13 Level 4 (transport) window size (frames) APN: 4
- 14 Level 4 (transport) congestion ctrl threshold APN: 4
- 15 Level 7 (switch) inactivity timeout (seconds)
normal: 900 may be set higher temporarily if monitored
- 16 Persistence for transmit delay APN: 64
- 17 Persistence slottime delay (10's of msec) APN: 10
- 18 Level 2 (link) T1 timeout, ie FRACK (seconds) APN: 5
- 19 Level 2 (link) window size (packets) APN: 2
- 20 Level 2 (link) retries APN: 10
- 21 Level 2 (link) T2 timeout (10's of msec) APN: 100
- 22 Level 2 (link) T3 timeout (10's of msec) APN: 18000
- 23 Level 2 (link) digipeat enable flag
0 - disable 1 - enable
- 24 Callsign validation flag
0 - disable 1 - enable APN: 0
- 25 Node beacon ctrl (0=off, 1=if active, 2=always) APN: 1
The default value is 0. Sysop must set this value to
one upon initialization of node or after a coldboot.

(Reason: if node has done a cold start on it's own
and values are reset, it will be beaconing much more
often and bring this to the attention of the Sysop.
- 26 CQ broadcasts enable flag
0 - disable 1 - enable APN: 1

RESET

Occasionally, the node may hang up or start 'acting funny'.

```
RESET [ anything-else ]
```

Entering the reset command alone will do a warmstart. If any other parameter is entered, a coldstart is performed. BE CAREFUL! This will erase any sysop entered data or commands! Always try a warmstart first. Keep a copy of PARMS, MODES, deleted commands, and entered text so that it may be re-entered in the event a cold start is required.

ROUTES

This command will display a list of the routes to neighbor nodes that it has a direct path to. A sysop may lock in a node route to a specific value for purposes of network control. This should ONLY be done in cooperation with other sysops and/or network managers as these values need to agree with values set at other nodes.

```
ROUTE [ port# | nodecall | {+/-} | quality# ]
```

Plus adds the route, minus deletes it. The port number is 0 for the radio port and 1 for the crosslink port. Nodecall is the callsign and SSID of the other node (do not include the alias).

SYSOP

The SYSOP command will respond with five numbers. Look up the corresponding letters and type them in order. The letter must be the same case as what it is in the password.

The SYSOP command has been enhanced to increase the level of security offered. One problem of the old system is that the password is easily visible unless the user repeats the SYSOP command a number of times. Even then, correlation between passwords is easy, so the password needs frequent changing. To reduce the change period, and make it harder to discover, the node will accept a string of characters and scan it for the password. Hence a response of, say, 30 or 40 characters can be sent, with a random number of random characters preceding the actual data and a random number following it. This does not eliminate such attacks, but if used carefully, it makes it quite a bit harder to attack.

TALK

Talk is a conferencing command. It allows a number of stations to hold a simultaneous conference. There is only one conference, and stations may connect to it by connecting to the node and issuing the TALK command. It may be exited by disconnecting or issuing the command '/EXIT' at the start of a line. (/EXIT may be abbreviated to /EX, and it is not case sensitive).

Each line sent by a user is copied to all other users in the conference, preceded by the callsign of the user.

Whenever a new station enters the conference, or a station leaves the conference using the '/EXIT' command, the other conference users get a message informing them of the event. These status messages are sent with the callsign of the node rather than the user.

Finally, when entering the TALK command, a message may be sent to all those users who are connected to the node but not otherwise doing anything. For example if WxABC enters the line

```
TALK Hello fred, can I have a chat, type 'TALK'
```

Then all other stations connected to the node, present in the USER list but idle, get the message

```
WxABC>> Hello fred, can I have a chat, type 'TALK'
```

displayed on their terminal.

UI

The UI command allows a string to be sent as a Level 2 UI frame. The syntax is

```
UI dest string_of_text_<CR>
```

Dest is a callsign like destination such as 'MAIL'. What will happen is that a single UI frame will be sent with a source callsign of the user who entered the command, a destination callsign of dest, and the rest of the string as text. This command may be used by BBSes to send mail beacons when connect to this node from another and when digipeating is turned off.

USERS

The USER command shows stations connected to the node. When a user connects on to another node or downlinks, an entry is formed showing the two links on either side of a "<-->" or "<..>" symbol. In this version, the '-' characters will be replaced by another character if one or other link is choked. The first '-' character is associated with the left hand connection (circuit or uplink). The second with the other circuit or downlink.

For a level 2 uplink or downlink, the "-" is replaced by 'C' if the connection is choked. For Level 4 connections, the "-" is replaced by one of 3 characters, "R" if it is choked from the other end, "L" if it is choked from this end or "C" if it is choked from both ends!

Without a connection in progress in merely states the status of the connection (Uplink).

Enable/Disable a command

Any command may be enabled or disabled by the use of the '+' or '-' modifier.

```
ANY_COMMAND [ + | - | THAT_COMMANDS_PARAMETERS ]
```

Commands may be caused to be displayed or not in the prompt screen if the '-' or '+' is followed by 'D' (or 'd').

BTEXT, INFO and CTEXT Command Syntax

If someone who is not Sysop uses the command, the current settings are displayed.

If a Sysop uses it without any additional parameters, the current setting is displayed.

If a Sysop enters one of the commands followed by a parameter of '*', the current message is deleted.

If a Sysop enters a string of text, that text is added to the current message, followed by a newline.

It is therefore possible to build up multiple line messages.

If you wish to start a message with a blank line, enter a message with a non display (or innocuous display) character such as control-A. It will get entered followed by a newline. On most systems this will not display. On some systems such as PCs running NOS, it will display as a smiley face.

Resetting Configuration from Coldstart (and initial setup)

Any time the node loses backup battery (internal lithium), it will do a cold start, which sets it back to the condition of initial installation. (NOTE: if X1J4 EPROM is swapped out without resetting Backup Battery, memory will be retained! You MUST reset battery or a RESET * to reset to new values.)

After a coldstart, the node operator should enter the SYSOP mode and do the following:

```
ADC - d          (removes from user prompt list)
IPROUTE - d      "      "      "      "      "
DXCLUSTER - d   "      "      "      "      "
ARP - d          "      "      "      "      "
STATS - d        "      "      "      "      "
PARM / 25 1      (resets beaconing to only when 'active')
set any other node specific differences from network
enter any INFO, BTEXT, or CTEXT messages your node has
lock routes after it has had time to initially list them
```

Recordkeeping

It is recommended that you keep a record of all PARMS & MODE settings. You can do this easily by setting your packet program to 'Screen Capture' and entering the PARMS & MODE commands while connected to the node. You might also enter BTEXT, CTEXT and INFO, if you have anything stored there. Next, BBS ? and HOST ? if you have any specified. AND don't forget to enter ROUTES! Then make sure that the callsign and alias are at least written on the page and store in a safe place. It is highly recommended to send a current copy of this listing to the APN coordinator. The password may be stored with this document if secure, or in a separate place.

Record keeping is essential to good network maintenance. And the sharing of that information with network administrators can make all the difference in an emergency, if you are for some reason absent, or unreachable.

Consultation

If you have any questions, whatsoever, about an settings, or you are unsure of what a value should be, please contact one of the network administrators. They are here to help you in anyway they can so that we can all have a smooth running and efficient packet network.