

KPC3+ (PLUS) Version 8.3 Settings (and 9.1) WIDEn-N DIGIs 24 Jul 09

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Update 24 Jul 09 added 2 LTexts for local EchoLink and IRLP objects  
Update 16 Nov 08 to clean up some text  
Update 2 Sep 08 added KA-node enabling for digi maintenance  
Update 8 Nov 07 clarified that "W2" in a digi text means that W2 is  
the current local recommendation for that area, not  
necessarily the trap limit.

Update 24 Jan 07 clean up the BText for local repeaters  
Update 18 Oct 05 to include 9.1 ROMS.

This applies to all 8.3 and 9.1 ROMS running on the KPC-3+(PLUS) TNC.  
With one small change (noted below), it also applies to KPC-3+ TNC's  
running the last version of the 8.2 ROMS ending in "7265". The  
difference is noted below in section 4) and "6E".

Typically, all KPC-3+ digis already support the basics of New n-N  
Paradigm, that is, WIDEn-N digipeating. But there are better ways to  
use these features that have been developed since January 2005 that  
includes:

- add path tracing to WIDEn-N for the health of the network
- add TRAPPING of large values of N to cut out-of-area-QRM
- add Proportional-pathing to the digi's beacon to cut QRM
- added SSn-N path for efficient area-wide routing
- added standrdized TEXT to let users see capabilities
- Added new overlay "S" so users could see these new digis

FIRST: RESET the TNC to factory defaults to start fresh.

1) Resetting the TNC should remove the obsolete "RELAY", "WIDE",  
"TRACE", and "SS" aliases which are obsolete.

2) Set these commands for normal operation:

INTERFACE - Terminal. So you can enter the remaining parameters  
HID OFF - These packets are of no value to APRS  
CD SOFTWARE - For the best collision avoidance method  
UIDWAIT OFF - To speed up the response  
TXD 18 - To shorten the TX delay by 40% from the 300ms default  
XMITLVL xxx - Set TX modulation level to less than full distortion!  
MYA NONE

SECOND: Set up the KA-Node process so that you can maintain distant  
digis via a path from a local digi if you own more than one digi.

MYNode XXXXXX-7 The KA node callsign  
NUMNodes 2 Will support up to 2 connections

THIRD: Eliminate the settings that are detrimental to the network.

\* UIDWAIT should be OFF. (the default). With it on, your digi is not doing the fundamental APRS fratricide that is the primary mechanism for minimizing channel loading. All digis that hear the same packet are supposed to DIGI it at the SAME time so that all those copies only take up one additional time slot. (but outward located digis will hear it without collision (and continue outward propagation)

FORTH: Set up the DIGI ALIASES to perform the New-N digipeating.

1) UITRACE WIDE,30 - This tells the digi to support WIDEn-N and to insert its own callsign so that the path is fully traceable.

2) UIFLOOD SS,30,ID - Where SS or SSS or SSSS is your State or local ARRL or other Ham radio communications section organization name. Notice, that having ID ON is a complete reversal to previous recommendations that wanted NOID to be set. Now we want ID ON to improve path tracing. Users of SSn-N paths are encouraged to use the path of WIDE1-1,SSn-N so that they get FIRST and LAST digi identification. These packets will arrive as DIGI1,DIGIn\*,SSn-N, showing the first and last DIGI's used.

3) UIDUPE to 30. This is a new command in version 9.1 roms.

FIFTH: Now set up the digi's own beacons into the network:

1) Prior to July 09, we used all four LTexts to implement Proportional Pathing on the digi's own data so that beacons went out direct every 10 minutes, but 1 hop every 30 and 2 hops every hour. Now we only use two LTexts for a direct 10 minute and 2 hop 1 hour beacon so we can use the other two LTexts for local info to mobiles.

See [www.aprs.org/digis/digi-rates.txt](http://www.aprs.org/digis/digi-rates.txt).

```
BLT 1 EVERY 01:00:00 START 00:00:03 <randomize the seconds
BLT 2 EVERY 00:10:00 START 00:04:06 " "
BLT 3 EVERY 00:10:00 START 00:06:09 " "
BLT 4 EVERY 00:10:00 START 00:08:11 " "
LTP 1 APN383 VIA WIDE2-2 <== hourly
LTP 2 APN383
LTP 3 APN383
LTP 4 APN383
```

This results in local info to mobile radio front panels every 10 minutes, and only one 2-hop beacon once an hour.

2) Your TOCALL in both the UNPROTO and the LTP's should use the

TOCALL of APN383 where APN identifies it as digipeater firmware. The "3" identifies it as a KPC-3 and the "83" identifies it as ROM version. NOTE, that settings for -early- version 8.2 ROMS are different and in a different file, and that version 9.0 should not be used at a DIGI, or should be upgraded to the 9.1 Kantronics release. See the APRS list of TOCALL versions for details of this naming convention. Obviously if you are using a 8.2 or 9.1 then use APN382 or APN391...

3) The BText is used for your locally recommended voice repeater frequency object. Set your UNPROTO path to be direct (APN383 with no VIAs) since this info is ONLY of value in the footprint of this digi and is SPAM everywhere else. Be sure to include the frequency and PL in the correct standardized format as detailed in [www.aprs.org/localinfo.html](http://www.aprs.org/localinfo.html).

The following BText format displays not only the Freq and tone info (T123) but also the range(R45m), net times(Net Th9PM) and meeting dates (Mg3rdTh) for all mobiles in the area:

```
BTEXT:
;146.835xy*111111zDDMM.hhN/DDMM.hhWrT123 R45m Net Th9PM Mg3rdTh
```

```
BEACON EVERY 10
UNPROTO APN383
```

This local frequency object is sent DIRECT to make sure it is only visible in the area where the repeater can be used! This eliminates QRM and also frustration at seeing frequencies you cannot possibly use. Since these are originated at the digi, they do not QRM anyone, because the digi will only transmit them if the channel is clear. Notice that the format has been designed to fit nicely on the 10x10x... byte windows on most mobile displays. For details see [www.aprs.org/localinfo.html](http://www.aprs.org/localinfo.html)

SIXTH: Set large-N TRAPS for abusive paths:

Set UIDIGI ON, WIDE4-4, WIDE5-5, WIDE6-6, WIDE7-7. These specific aliases act like traps because this digi will digipeat them once and then no farther. The closer you get to a high density area, the smaller N's you should limit. In typical WIDE2-2 METRO areas, set UIDIGI to include WIDE3-3,WIDE4-4,WIDE5-5,WIDE6-6. Also, if you are getting lots of W4-1 packets, for example, from a distant city that is not trapping 4-4 at the source, you can also trap those specifically by adding WIDE4-1 to your UIDIGI alias list. For more on this be sure to see how we did it in Los Angeles, and prevented anything above two hops from getting into the Los Angeles Basin.

<http://www.aprs.org/fixingLA.html>

\*\*\* SPECIAL NOTE FOR KPC-3 DIGIS WITH THE LAST 8.2 VERSION 7265:  
This ROM will not work right with WIDE1-1,WIDE2-1 mobile paths unless one of the UIDIGI Aliases includes WIDE1-1. So in those digis, set UIDIGI ON WIDE1-1,WIDE4-4,WIDE3-3,WIDE3-2.

SEVENTH: Now set the digi to INFORM users of its capabilities and other local information of value to the mobile operator. See [www.aprs.org/localinfo.html](http://www.aprs.org/localinfo.html)

1) Set the two DIGI information LOCATION TEXTS with this exact format for the consistent display to the users as to the capabilities of this digi:

FORMAT: PHGxxxx W2, SSSn-N, remaining comments....

- a) "PHGXXXX " plots a cricle showing the working range of the digi
  - b) "W2, SSSn-N" informs users of the recommended hops and section.
  - c) The "S" character between the LAT/LONG shows an "S" overlay
  - d) If you feel you must use the altitude /A=001377, please add it at the end, not first. Since those first 20 bytes are the most important to show up on some limited displays (D7 etc).
- In my opinion, Altitude is redundant since the more valuable info of height above average terrain is included in PHG.

CONCLUSION:

The best way to set up an APRS digi is to FIRST do a RESET or RESTORE to FACTORY DEFAULTS to make sure you dont have any bad settings that have crept into your system. Then the ONLY commmands you have to change are the ones below. For the Local-Direct BText advertising a local voice repeater, I assumed a local Voice repeater on 146.940 with a PL of 107 for this example:

```
MYCALL      XXXXXX
MYREMOTE    XXXXXX
MYNODE      XXXXXX-7
NUMNODES    2
INTERFACE   TERMINAL
RTEXT       (your secret password string)
BText       ;146.835xy*111111zDDMM.hhN/DDMM.hhWrT123 R45m Net Th9PM Mg3rdTh
UNPROTO     APN383 <== ID's the KPC-3+ ver 8.3 local,direct no VIA's
HID         OFF
CD          SOFTWARE
TXD         18
XMITLVL     xxx <== adjust to well below distortion point

LT 1 !DDMM.hhNSDDMM.hhW#PHGphgd W2, SSn-N, new digi in kalamazoo, etc
LT 2 !DDMM.hhNSDDMM.hhW#PHGphgd W2, SSn-N, new digi in kalamazoo, etc
```

```
LT 3 ;EL-123456*111111zDDMM.hhNEDDDMM.hhW0FFF.FFFMHz Tnnn CALLSIGN-R
LT 4 ;IRLP-4040*111111zDDMM.hhNIDDDMM.hhW0FFF.FFFMHz Tnnn CALLSIGN
    The first two DIGI LTexts must be identical so the Position
    Beacon is not always changing and using up the new-posit LOG
    files on every user's PC...
```

```
BLT 1 EVERY 01:00:00 START 00:00:03
BLT 2 EVERY 00:10:00 START 00:04:06
BLT 3 EVERY 00:10:00 START 00:06:13
BLT 4 EVERY 00:10:00 START 00:08:17
LTP 1 APN383 VIA WIDE2-2
LTP 2 APN383
LTP 3 APN383
LTP 4 APN383
```

```
UIDIGI ON WIDE4-4,WIDE5-5,WIDE6-6,WIDE7-7
UIFLOOD SS,30,ID <for your SS state or SSS or SSSS ARRL section
UITRACE WIDE,30 <makes all WIDEn-N traceable
UIDUPE 30 <new command for the 9.1 ROMS
```

LOCAL VOICE REPEATER RECOMMENDED1: Use the BText to show the locally recommended voice repeater object and frequency for travelers through the area. Use two of the LTexts for similar purposes for OPEN Echolink and IRLP nodes. These objects go DIRECT only and the frequency shows up on the front panel of all APRS mobiles with displays in their cars.

```
BText: ;146.835xy*111111zDDMM.hhN/DDDDMM.hhWrT123 R45m Net Th9PM Mg3rdTh
```

This shows the 146.835—a repeater (xy make it unique)  
with a TONE of 123 HZ (leave off tenths)  
with a weekly net at 9 PM on Thursdays  
with Monthly meetings on the 3rd Thursday

```
BEACON E 10 <== every 10 minutes direct
UNPROTO APN383
```

see the web page: [www.aprs.org/localinfo.html](http://www.aprs.org/localinfo.html)

That's all there is to it. Please don't diddle with any other parameters. The defaults for those are the correct settings. If you dink with them you can only make performance worse. Also please use the consistent abbreviations for Wn, SSn-N so users know what is going on.

de WB4APR, bob