

White Paper RRI-001

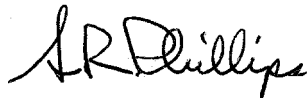
Traffic System Status

for the Central US Area of Radio Relay International

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READ: A document stays in the Developmental release state until it is approved by all those listed on the cover sheet. It then becomes Approved and placed under revision control.

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1 Scope

1.1 General

In late July, 2016, the upper level traffic transport system (region nets and above including digital) separated from the National Traffic System (NTS)TM to form a new non-profit corporation named Radio Relay International (RRI). The NTS still operates at the section level under the management of the Section Manager and Section Traffic Manager.

The former NTS Digital (NTSD) also separated from the NTS to form a new Digital Traffic Network (DTN), which is also a part of RRI. This White Paper documents the status in the Central US Area of the combined National Traffic SystemSM and Radio Relay International as of the date indicated. Updates will be made as more information becomes available or circumstances change.

1.2 Purpose

This White Paper documents the current status of the nets and operations in the Central US Area of NTS and RRI. It addresses all 3 major parts of these systems including Cycle 1 / 2, Cycle 3 / 4, and Digital.

For purposes of simplification, Cycle 1 / 2 will be referred to as Cycle 2 (Daytime SSB Nets) and Cycle 3 / 4 will be referred to as Cycle 4 (Nighttime CW Nets and SSB/FM Nets).

Digital will include both DTN, operating with the BPQ32 store-and-forward software, and the use of Winlink (formerly known as Winlink 2000 or WL2K), including Digital Traffic Stations who receive traffic from the DTN Hubs.

Section nets are also described, both CW and SSB, where information is available. These include both those affiliated with the NTS and Independent nets that may or may not be affiliated with RRI.

Finally, NTS or RRI Local Nets (including VHF FM) and non-affiliated nets that are involved in handling traffic anywhere in the section(s) are documented.

The primary purpose of this White Paper is to identify those parts of the Central Area that do not have adequate representation or that are in need of additional help and/or workarounds. Following initial completion of the status data collection, discussion with all RRI and NTS officials and stakeholders (e.g., net managers and net members) will be encouraged to help resolve identified issues.

2 Applicable Documents

Note that many documents listed here are not yet updated to reflect the split between NTS and RRI. They remain listed for general information.

RRI	RRI Traffic Operations Manual 2017 http://radio-relay.org/wp-content/uploads/2017/03/RRI-Traffic-Operations-Manual-2017-FINAL.pdf
ARRL/RRI	NTS Methods and Practices Guide (MPG) (Appendix B of the PSCM) Being updated for RRI http://www.arrl.org/appendix-b-nts-methods-and-practices-guidelines
ARRL	Chapter 6 of the NTS MPG (MPG6) (NTS Digital) Being updated for RRI http://www.arrl.org/appendix-b-nts-methods-and-practices-guidelines
CAN NCSs	Cycle 4 CAN Monthly Reports
KM0R	DTN Monthly Reports
K6JT	RRI Digital Operations white paper, RRI-002 http://radio-relay.org/wp-content/uploads/2017/03/RRI-Digital-Operations.pdf
K6JT	Cycle 2 CAN and TCC Operations white paper, NTS-005 (will be updated) http://radio-relay.org/wp-content/uploads/2017/03/NTS-005.pdf
DTN Staff	NTS Digital system web site – lots of good information about DTN: http://www.nts-digital.net/ (being updated for DTN)

3 Cycle 4

The upper level of Cycle 4 consists of the Central US Area Net (CAN), 9th Call Area Net (9RN), Tenth Region Net (TEN), 5th Call Area Net (RN5), Inter-Area Traffic operations, and Digital operations. At the section / state level, Section Nets are in operation for some, but not all, sections. Liaisons to and from CAN to the Western (formerly Pacific) Area – WAN, and Eastern Area – RRIE / EAN are provided by Inter-Area Traffic Network (IATN) stations. This is illustrated in Figure 1. The Cycle 4 Central US Area above section level, with the exception of TEN, is affiliated only with RRI.

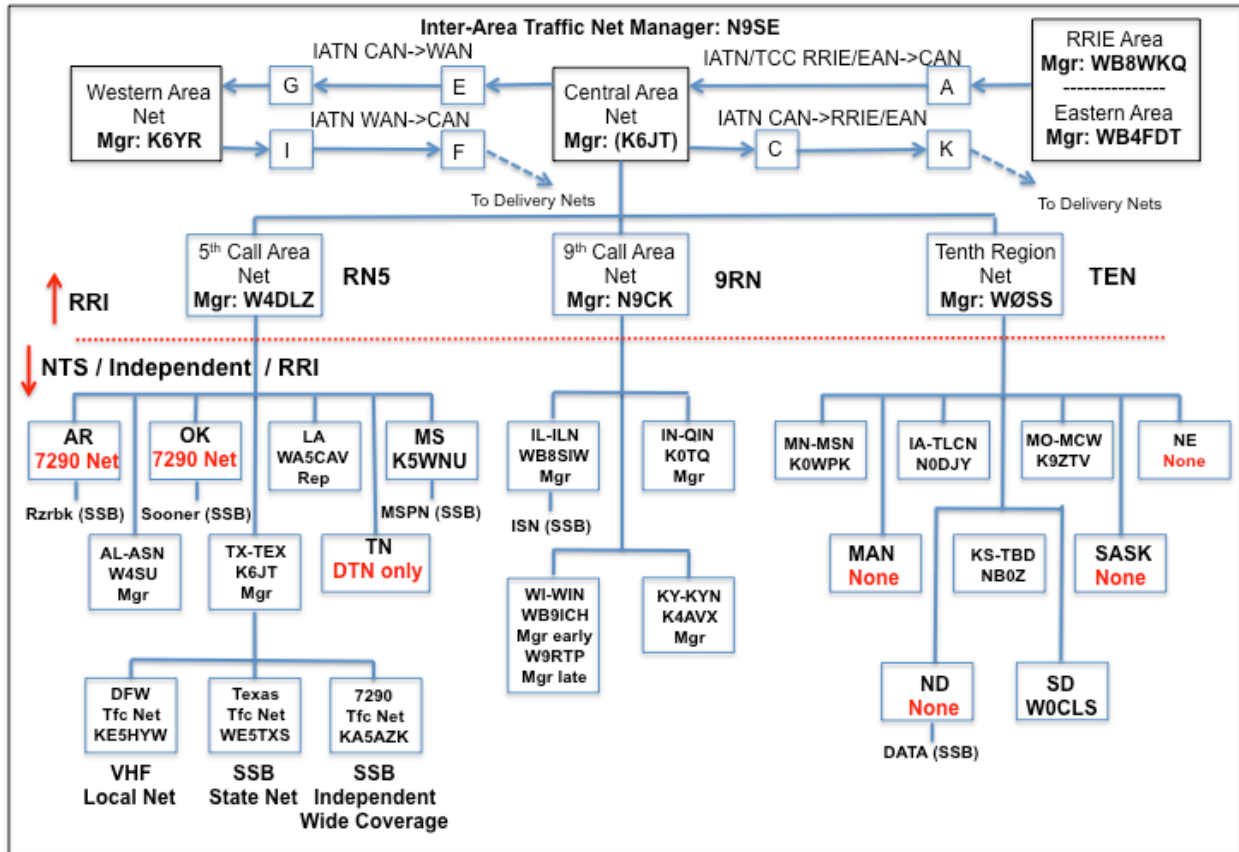


Figure 1 Cycle 4 Networks and Connections

Also shown in the figure are a few local or independent nets that are tied to the Section level to provide an idea of the next level below cycle 4 section net. Note that TEX represents multiple sections in Texas and is an Independent net. There are other sections with liaisons to evening SSB nets and cycle 2 nets as well, but these are not all shown in this figure by name. Full information about them appears in the tables in section 3.6.

Pertinent information about each upper level net and IATN liaison defined in the figure is presented in the following sections. Note that the Eastern part of the US is a hybrid of RRI and NTS with two Area level nets sending liaison stations to CAN. RRIE is used as the name of the RRI net to distinguish it from EAN. All stations work together.

3.1 Inter-Area Traffic Network Management

The cycle 4 IATN Manager is N9SE. He manages assignments for all of the Central Area liaison stations shown in the preceding figure (Charlie, Echo, and Foxtrot). Current stations fulfilling these functions are shown in the following table (TBR):

Table 1, Inter-Area Traffic Assignments in Cycle 4

Day (local time)	Charlie	Echo	Foxtrot
Sunday	K5GM	W4SU	WB8SIW
Monday	K9TQ	W5CU	K5RG
Tuesday	N9SE	(Open)	N9CK
Wednesday	N9CK	K5RG	K5RG
Thursday	W5CU	K6JT	K6JT
Friday	(Open)	N9SE	N9SE
Saturday	N0SM	K5GM	K5GM

The Eastern Area is a hybrid of NTS and RRI. There are two area nets, denoted Eastern Area Net (EAN), managed by WB4FDT that is affiliated with NTS, and RRI East or RRIE, managed by WB8WKQ, affiliated with RRI.

The former Pacific Area has been renamed the Western Area and Cycle 4 above section level is wholly a part of RRI. The net there is known as the Western Area Net or WAN.

Note that EAN and RRI may each send a representative directly to the Central Area Net with traffic (station Alpha). Outgoing traffic to eastern is listed and handled as RRIE (Kilo). Other liaison stations for incoming and outgoing traffic meet with a counterpart either on the net (in the case of WAN) or at a scheduled time and frequency outside of a net. IATN stations have the final decision on the time and frequency of their sked provided it is completed by the next cycle 4 destination net meeting.

The nominal time frames for the skeds are as follows. Essentially IATN Charlie to RRIE is ASAP (on or right after CAN), IATN Echo to WAN is any time before WAN, also sometimes on CAN, and IATN Foxtrot for incoming CAN traffic occurs on or after WAN or by out-of-net schedules. This CAN traffic may be routed back to any suitable cycle 2 or 4 delivery net up to and including CAN the next evening. Anything above Routine should be routed by the fastest possible outlet, including DTN digital.

3.2 Central US Area Net

The Central US Area Net, for which a manager has not been selected (nominations are still open) is managed by K6JT, who is the acting interim manager. The net meets nightly at 2030 CT on either 3552 or 7052 (summer) with an alternate of 3595 (TBR) or 7108 depending on contest activity. Currently assigned net control stations for CAN are shown in the following table (TBR).

Table 2, Central US Area Net NCS Assignments in Cycle 4

Day (local time)	Station	Day (local)	Station
Sunday	K4QCQ	Monday	K5GM
Tuesday	N9CK (N0SM 1/Mo)	Wednesday	K5RG
Thursday	K6JT	Friday	N0SM
Saturday	W4SU	Backup	None

3.2.1 Handling of RRIE and EAN Traffic

There is currently confusion about how to handle listed traffic for EAN on CAN. The IATN Charlie station will receive both those listed as RRIE and those listed as EAN. Some 9RN and RN5 operators do not yet know they should be using QTC RRIE instead of EAN when listing their traffic. Traffic from any liaison station from an RRI net (9RN and RN5) should be treated as RRIE regardless of how it is listed. Any TEN traffic going to EAN may be listed as EAN, but may also be listed as RRIE at the operator's choice. By default, if there is only one RRIE station that checks into CAN, that station is both IATN Alpha and IATN Kilo. Stations coming from EAN are TCC Alpha (incoming) and TCC Kilo (outgoing).

The IATN Charlie station should be assigned by the NCS to pick up both RRIE and EAN. If the message came from 9RN or RN5, it is automatically to be passed to the IATN Kilo station. If it came from TEN, unless it was specifically listed as RRIE, it should go to the TCC Kilo station, if there is one. If there is no TCC Kilo, then all traffic for Eastern goes to the RRIE representative and vice-versa if there is no RRIE station. The NCS should be cognizant of this and link the stations accordingly.

All EAN representatives should be serviced equally with RRIE representatives with no prejudice.

3.3 9th Call Area Net

The Ninth Call Area Net (9RN) meets on 3555 KHz at 1945 and 2130 CT. The net manager is N9CK. He performs CAN Liaison duties Sunday through Wednesday. N9CK, N9SE, K9LGU, WB4ZDU, W9BGJ, K4QCQ, and K0TQ may fill in as NCS and CAN Liaison, but there is no fixed schedule.

3.4 Tenth Region Net

The Tenth Region Net (TEN) meets nightly at 1945 and 2130 CT on 3562 KHz. Net manager is W0SS. Current NCS and Liaison (to CAN) stations are shown in the following table (TBR):

Table 3, Tenth Region Net NCS and Liaison Stations

Day (Local)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
NCS	W00W	W0SJS	W00W	N0SM	W0SJS	W0SS	W0SJS

To CAN	N0SM	W0SS	W0SS	W0SS	ND0N	W0SS	NB0Z
From CAN	N0SM	W0SS	W0SS	W0SS	W0SS	N0SM	W0SS

Liaison Stations to TEN from the sections include the following (TBR):

Table 4, Cycle 4 Tenth Region Net Section Liaison Stations

Section	Stations
IA	WB0B, N0DJY, W0YLS, N0JL, N0SM, W0SS (100% coverage)
KS	NB0Z (about 50% coverage)
MO	W7FB, K9ZTV, W0FCE, AC0M (good coverage)
MN	N0BM, KE0G, KA0RMP, N0SPY, W00W, K0WPK (good coverage)
SD	W0CLS (very regular)
NE	No coverage since WA4STO resigned
ND	None, but W0CLS sometimes takes ND traffic (Note also that ND0CW, the ND STM, is active on Cycle 2 10RN)
MAN	None, but W0CLS has taken MAN traffic at times and ND0CW will take this traffic on Cycle 2 10RN
SASK	VE5SDH, and W0CLS has taken SASK traffic at times and ND0CW will take this traffic on Cycle 2 10RN

3.5 Fifth Call Area Net (RN5)

Region Net 5 meets nightly at 1930 and 2130 CT on 3567 KHz, backup 3595 on contest weekends, or 7108 KHz for the early session in the summertime. Net manager is W4DLZ, but he has been relatively inactive due to health issues. W4SU has been collecting reports. Current NCS and Liaison (to CAN) stations are shown in the following table (TBR). Note that W5CU is in Colorado during the summer / early fall months. Also, WA4ZPZ can operate only during months where it is dark during net times due to HOA antenna restrictions.

Table 5, Region Net 5 NCS and Liaison Stations

Day (Local)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
NCS	WA4ZPZ	W5FEA	W4DLZ	W5CU	W4SU/K6JT	W4SU	W4DLZ
To CAN	W4SU	WA4ZPZ	Open	Open	W4SU	W4SU	(Open)

From CAN	W5CU	W5CU	Open	Open	K6JT	WA4ZPZ	(Open)
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Primary liaison stations from each section (or state) are shown in the following table.

Table 6, Region Net 5 Section Liaison Stations

Section	Stations
AR	K5TSK (occasional), AR traffic routed to the TX liaison for the 7290 Traffic Net
OK	W5CU (regular) Rx Backup when out of town, TX liaisons for 7290 Traffic Net
LA	WA5CAV regular
MS	K5WNU regular
AL	W4SU (regular), WA4ZPZ (winter only)
TX	W5CU, W5DY, W5FEA, K5GM, K6JT, K5RG, N5RL (regular)
TN	W4SQE (Occasional), route to TX liaisons for K6JT to transfer to DTN or Cycle 2 RN5
NFL	(Unofficial, part time) W4DLZ, W8IM, WA4BAM, KC4FL, KZ8Q

3.6 Section (State) and Local Nets (CW, SSB, and VHF FM)

This section of the document lists all known section CW, SSB, and VHF FM nets that are either part of the NTS or that have liaison with NTS or RRI nets and a primary function of handling traffic. Those that meet in the evening hours are listed. Nets meeting during cycle 2 hours are shown in that section.

Table 7, Section and Local/Independent Nets in Cycle 4 Fifth Call Area Net

Name	Manager	Description
ASN (AL)	W4SU	Alabama Section Net meets nightly on 3575 KHz (alternate 7116 KHz) at 1900 local. The net has approximately 12 active members and will accept all traffic
ATNM (AL)	KI4ZZD	This is an independent net in Alabama, named Alabama Traffic Net Mike, meeting at 1830 local on 3965 KHz. They will accept traffic. ATNM discontinued the previous "no book traffic" policy. ATNM sends outgoing traffic via digital as well as via ASN liaison stations. Incoming traffic to ATNM is mostly via digital. The net also meets at 0800 Sunday on 3965.
AR	None	There is no Arkansas CW section net. There is no liaison station to RN5 from AR as of Jan 1, 2014. Workaround is to send AR traffic to the 7290 traffic net via TEX liaisons.
RZRBK (AR)	N3QL	The Arkansas Razorback Net meets daily on 3987.5 KHz at 1800 winter, 1830 summer, local time. This net will take traffic but only specific types. They prefer to not handle license renewal notices due to the chance of finding a Silent Key, and will accept only traffic with phone numbers. Liaison is via the 7290 traffic net.
LCW (LA)	WA5CAV	The Louisiana CW Section Net has discontinued operation. Regular liaison is maintained with RN5 by WA5CAV.
LA	TBD	An SSB traffic net is reported to meet on 3910 KHz at 1800 local. Other information is TBD.

Name	Manager	Description
MS CW	K5WNU	There is no Mississippi CW section net. K5WNU checks in to RN5 when he is not out of town on business. There are morning and evening SSB nets.
MSPN (MS)	K5NRK	The Mississippi phone net meets daily on 3862 KHZ at 17:30 hours Central Standard Time or 18:00 hours Central Daylight Time and whenever needed for emergencies with a backup frequency of 7238 Khz. All traffic is accepted. Liaison is maintained with TBD.
OK	None	There is no Oklahoma CW section net. There is one liaison station to RN5 from OK who accepts traffic (W5CU). Incoming OK traffic is also handled by the TX stations in the absence of W5CU via the 7290 Traffic Net.
Sooner (OK)	W5JPI	The Oklahoma Sooner Traffic Net meets at 1730 local, Monday thru Saturday, on 3845 KHz. This net has ties to Cycle 2 RN5 and CAN via the STM, KE5LTA.
TN	W4SQE	The Tennessee section CW net meets on 3562 KHz at 1900 when an NCS is available (TBR). There is one liaison station to RN5 from TN (W4SQE) who accepts traffic, although he has not checked in for quite a while now.
TPN	WA4VVX	The Tennessee Phone Net meets Monday thru Saturday at 1830 on 3980 KHz. There is also a morning session (see cycle 2 table). KJ4WS and WA4VVX are NCS stations. Liaison is primarily via DTN Digital.
TEX (TX)	K6JT	TEXas CW Traffic Net meets nightly on 7053 (summer) or 3541 Khz at 1900 local and again on 3541 Khz at 2200 local. It is an independent net for all 3 Texas sections (WTX, NTX, STX) and also has OK stations checking in with approximately 20 regularly active stations. Liaison stations carry traffic to and from RN5, the VHF DFW Traffic Net, Statewide Texas Traffic Net, and Independent wide-coverage 7290 Traffic Net.
TSN (TX+)	KD5RQB	TSN meets Tuesday, Thursday, and Friday on 3570 KHz at 1945 local time. Code speed is kept low – below 12 wpm in general. This is a training net with participants not only from Texas but also OK, KS, LA, and other states. A training message is sent every session. KD5RQB has a large collection of these messages and is willing to share them with any other NM who would like to use them. Liaison was maintained with TEX, but there is no assigned liaison position now.
DFW (TX)	KF5TTN	This net meets at 1830 local on the W5FC repeater (146.88- / 110.9 PL) and again at 2230 local on the WA5CKF repeater (146.72- / 110.9 PL). The net covers the Dallas / Ft. Worth metropolitan area and accepts all traffic.
TTN (TX)	WE5TXS	The Texas Traffic Net meets on 3873 KHz (SSB) from 1830 to 1930 daily. It covers the state of Texas (all 3 sections) and accepts all traffic. An average of 62 stations check in each evening. There is also a daytime version of TTN, described in section 4.6. Both are currently NTS affiliated.
Travis ARES (TX)	K5GM (TBR)	The Travis Co. ARES net meets on 147.36(+) at 1900 CT on Sunday. The callup always includes a request for traffic and for liaison stations to other NTS or RRI Nets.
DTTN (TX)	W5RWP	Daytime TTN meets M-Sa at 0830 local on 7285 KHz SSB. See the cycle 2 table in section 4.6 for more information.
7290 (TX+)	KA5AZK	The 7290 Traffic Net meets M-Sa at 1000 to 1200 local on 7290 KHz SSB and again on M-F from 1300-1400 local. This is an independent wide-coverage net. See the cycle 2 table in section 4.6 for more information.

Table 8, Section and Local/Independent Nets in Cycle 4 Ninth Call Area Net

Name	Manager	Description
ILN (IL)	WB8SIW	The Illinois Net meets daily on 3538 KHz at 1915 Central Time. Alternate Frequencies are 7048-KHz (summer) and 1838-KHz (winter). Daily liaison is maintained with the ISN (Illinois Sideband Net) and 9RN. Liaison is also maintained with the National Weather Service for weather data collected in

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Name	Manager	Description
		Radiogram format. Speeds run a bit slower than the average Section CW Net in order to get new CW operators up to speed.
ISN (IL)	WB9QPM	The Illinois Sideband Net meets on 3905-KHz at 1800 Central Time. The main function of the net is traffic handling and they accept all legal traffic. Although an evening net, liaison with Cycle 2 9RN is maintained by the net manager.
ITN (IN)	WA5LOU	The Indiana Traffic Net meets nightly at 1800 ET on 3940 KHz LSB. There is also a Cycle 2 morning session. Liaison is maintained with the Cycle 2 session and Cycle 2 9RN (TBR).
QIN (IN)	K0TQ	The Indiana CW net meets nightly at 1900 Central (2000 Eastern – most of the state is on ET) on 3535 KHz. Liaison is with the 9RN net and occasionally the ITN SSB net (TBR). Active stations include K0TQ, N9SE, K9PUI, W9PC, W9BGJ, K9LA, NI9Y, and KA9QWC. NCS stations are currently W9PC (Sunday), N9SE (Monday, Thursday), and K0TQ (all other days). There is also a cycle 2 session meeting at 0800 ET on 3535 KHz.
ICN (IN)	WA9VBG	The Indiana Slow CW Net meets nightly on 3535 KHz at 1900 ET. Liaison is maintained with QIN (TBR).
IDN (IN)	WB9FHP	The Indiana ARES Digital Net meets Wednesday at 2030 ET on 3583 KHz. The net uses the Olivia 8/500 waveform on USB. Liaison with DTN is direct via WB9FHP, the 9RN DTN Hub.
KYN (KY)	W4NHO	KYN meets nightly at 2100 ET on 3535 KHz (an hour after QIN). There is also a 9 AM (ET) Saturday session. The NCS schedule is Sun - KO4OL; Mon - WB4ZDU; Tue - WB4ZDU; Wed - K4AVX; Thur - W4NHO; Fri - Open; Sat 9 AM & PM - Open. WB4ZDU and W4NHO are 9RN cycle 4 representatives, and KO4OL makes many of the daytime 9RN nets. Members include K4BEH, WD4OWB, AD4DX, K4DZM, WD9F, W4NHO, WB4IEA, KO4OL, K4TXJ, WB4ZDU, KR4WI, AND K4AVX, NM. Stations from Indiana drop in regularly, since they share the same frequency. There are about 140 QNI per month, and QTC averages about 30 (all TBR).
KYDEN (KY)	KC4BQK	The KY Emergency net meets Monday at 2330Z on 3972.5 KHz. There is also a digital net using PSK31 on 3585 KHz meeting Monday at 0130Z. Times are summer. Nets stay same local time with daylight time changes.
ARES (KY)	Local	There are many ARES nets in KY, listed in the following, thanks to research by K4AVX. District 7 net handles traffic received from KEN and the Tri-State Amateur Traffic Net. <ul style="list-style-type: none"> • Kentucky District 7 Amateur Radio Emergency Team net meets Thursday at 8PM local on 147.375+ pl 123.0 Walton, KY, AG4BC • Woodford County ARES Net - Thursday 8:00 PM - 145.330- • Anderson County ARES Net - Thursday 8:30 PM - 146.835- Tone 107.2, coordinator KI4TLY. • Frankfort, KY Emergency Nets conducted on Primary Repeater: 147.105+ Tone: 107.2 - Secondary Repeater: 147.240+ Tone: 100.0 • KY Linked System: Stubblefield Repeater Club Net - Wednesday 9:00 PM - 147.000+ Tone: 173.8 • KY Wide Area Net Shelbyville-Williamsburg (I-75 Corridor) - Thursday 9:00 PM - 444.050+ Tone: 100.0 KI4USD • Jefferson County A.R.E.S. net is on Tuesday evening at 7:30 pm ET on 146.880 mhz (tone 100 Hz). This net is affiliated with NTS and is stated in the preamble. K4TXJ • Trimble Co. and Oldham Co. use the Crestwood Repeater on 147.390 with a tone of 151.2 Monday nights at 8:00 pm. KB4IFE • Harlan Co. ARES and Skywarn Net - Sundays 8:30 PM, Harlan Repeater 147.105+ 103.5 tone, KC4FNB • Eastern KY Linked Repeater System: Big Sandy Valley from Lawrence Co. to Pike Co., plus Whitesburg and Hazard in the KY River Valley. All can access

Name	Manager	Description
		<p>the following nets from the system:</p> <ul style="list-style-type: none"> ○ East Kentucky ARES Net, Tue.9:00pm - Originates from Floyd Co Repeater, WB4CLW. ○ Pike County ARES Net, Thursdays, 9:00 pm, originates from Pike Co. repeater, WB4WAU. ○ Perry Co. ARES and Skywarn Net - Sun, 8:45pm – originates from Hazard Repeater, 146.67- T 103.5 KA4AOU ○ Letcher Co. ARES and SKYwarn Net. Mondays 9 PM, originates from Whitesburg Repeater 145.350 - 186.2 tone, N4QBE and KJ4LOB. <ul style="list-style-type: none"> • Madison Co. ARES, Mon 1900 ET, 146.865, 192.8 PL • PO BOY net (Corbin), Mon 2030 ET, 146.61, (No PL) • Somerset ARES Net, Tue 2030, 146.88, PL 77 • Region 11 Skywarn net, Tue 2100, 146.925, PL 79.7 • Wilderness Trail Emer Net , Wed 2030 , 146.715, PL 100 • Fayette Co. ARES, Wed 2100, 147.12, PL 141.3 • PARC (Clark Co), Thur 2045, 145.43, PL 203.5
WIN/E (WI)	WB9ICH	The early session of the Wisconsin Intrastate Net meets at 1900 local on 3555 KHz. There are about 15 regular members and they maintain liaison with 9RN and WIN-L, the late session of the net, as well as SSB nets including WSBN. They will accept any legal traffic. Net sessions are generally 8 to 10 minutes.
WIN/L (WI)	W9RTP	WIN/Late meets each night at 2200 on 3555 KHz. Representatives from 9RN list traffic here. If it is not handled, it is routed to the SSB nets the next day. Liaisons include not only 9RN but also WSBN (3985/noon daily), CAN, and the Hit and Bounce Net (HBN), by various individual ops according to their preferences. There are about 12 stations active on this net with 5-8 regulars checking in. All traffic is accepted.
WSBN (WI)	KB9KEG	The Wisconsin Side Band Net meets each evening at 1700 local time on 3985 KHz to handle traffic. Liaison is maintained with Daytime 9RN and WIN/E. All NTS traffic is welcome. Approximately 30 active members.
WNN (WI)	KB9ROB	The Wisconsin Novice Net (CW) meets daily on 3555 KHz at 1800 local time. Because the main purpose of this net is training, it accepts and passes any and all radiogram traffic. Thru traffic is routed to WIN/E. There are about 15 stations active on this net with 8 - 10 QNI typical.
WSSN (WI)	N1KSN	The Wisconsin Slow Speed Net meets on Sn, T, Th, and F at 1830 local on 3555 KHz. This CW net offers additional training in traffic handling and net protocol. Any NTS traffic for which there is an outlet is handled immediately. Thru traffic is routed to WIN/E. Eight to ten check-ins per session is typical.

Table 9, Section and Local/Independent Nets in Cycle 4 Tenth Region Net

Name	Manager	Description
TLCN (IA)	N0DJY	The Iowa Tall Corn Net (TLCN) meets on 3560 KHz at 18:30 and 22:00 CT. Regular liaison stations report to TEN and all traffic is accepted.
I75 (IA)	K0FLY	The Iowa 75 meter net meets Monday thru Saturday at 1730 CT on 3970 KHz. There is a noontime net (cycle 2) that also meets on the same frequency. This is a Section Net with stated net purpose of emergency and traffic although the net Board of Directors wishes for the net to remain independent with elected manager and NCS stations. NTS/RRI liaison is maintained with both cycle 2 and 4 TEN.
ITEN (IA)	K0CY	The Iowa Traffic and Emergency Net is an NTS traffic net meeting only on Sunday, in lieu of the I75 net, at 1800 CT (3970khz). Liaison is maintained with cycle 2 and 4 TEN.
KS	NB0Z (TBR)	The Kansas CW Net meets at 1900 and 2200 CT on 3547 KHz. Liaison is maintained with TEN by NB0Z.

Name	Manager	Description
KSBN (KS)	N0KFS	The Kansas Sideband Net meets daily at 1830 on 3920 KHz. This is a section wide emergency net with NTS/RRI affiliation. Liaison information is TBD.
MAN	None	No NTS representation from Manitoba. There is an evening Weather net that accepts some traffic (per ND0CW). The net meets on 3747 KHz at 1900 CT. Note that some VE4 stations also check into the ND DATA net at 1830.
MSPN/ E (MN)	W00A	The Minnesota Section Phone Net meets daily at 1730 local on 3860 KHz. Liaison is maintained with the MSN CW net, listed next, and cycle 2 10RN. (TBR)
MSN (MN)	K0WPK	The Minnesota Section Net (CW) currently meets daily at 1845 local time on 3568 KHz. Liaison is maintained with the MSPN (SSB) and cycle 4 TEN. (TBR)
MTN (MO)	K0RWL	The Missouri Traffic Net meets daily at 1745 local on 3963. NCS stations are comprised of N0UMP, K0DEW, K0VET, KCOM, KI0I, KE7FZZ, and K0RWL. Liaison is maintained with the MO CW net, listed next, and cycle 2 10RN. (TBR)
MON (MO)	K9ZTV	The Missouri CW net meets daily at 1830 and 2145 on 3585 KHz. Liaison is maintained with TEN and MTN. (TBR)
DATA (ND)	ND0CW	The Dakota Amateur Traffic Association (DATA) net meets daily on 3937 KHz at 1830. During the winter months, when the band is long, the net meets at 1700, usually Nov-March/April to avoid inter-section conflicts. Only a few operators will accept Book traffic. Liaison is maintained with Cycle 2 TEN by ND0CW. There is no CW net and no liaison to cycle 4 TEN.
NCW (NE)	AA0W	The Nebraska CW Traffic Net meets Monday through Friday at 1900 on 3540 KHz. This is a section NTS net with informal liaison to the Tenth Region Net (TEN), although there are no regularly assigned stations. The net is not active during some of the summer months due to high QRN.
Storm (NE)	AG0L and WY0F	The Nebraska Storm Net meets on 3982 daily at 1830. This is primarily a roll-call weather net and is not generally involved with formal NTS traffic handling, although they will handle it when it is required.
SASK	None	No NTS representation from Saskatchewan, although VE5SDH has started to check in to TEN. There is an evening Weather net that accepts some traffic (per ND0CW, who takes SASK traffic there). The net meets at 1900 CST / 2000 CDT on 3735 KHz. There is also a morning session.
SD	None	There is no CW section net but W0CLS regularly performs liaison to TEN.
NEO (SD)	WA0ZWZ	South Dakota NEO Evening Net meets daily at 1800 local on 3860 KHz. This is an emergency, traffic, and weather net. W0CLS and NI0I perform liaison with the NTS/RRI Tenth Region Net (both cycles).

4 Cycle 2

The Upper levels of Cycle 2 are a mirror of those in Cycle 4, as shown in the following figure.

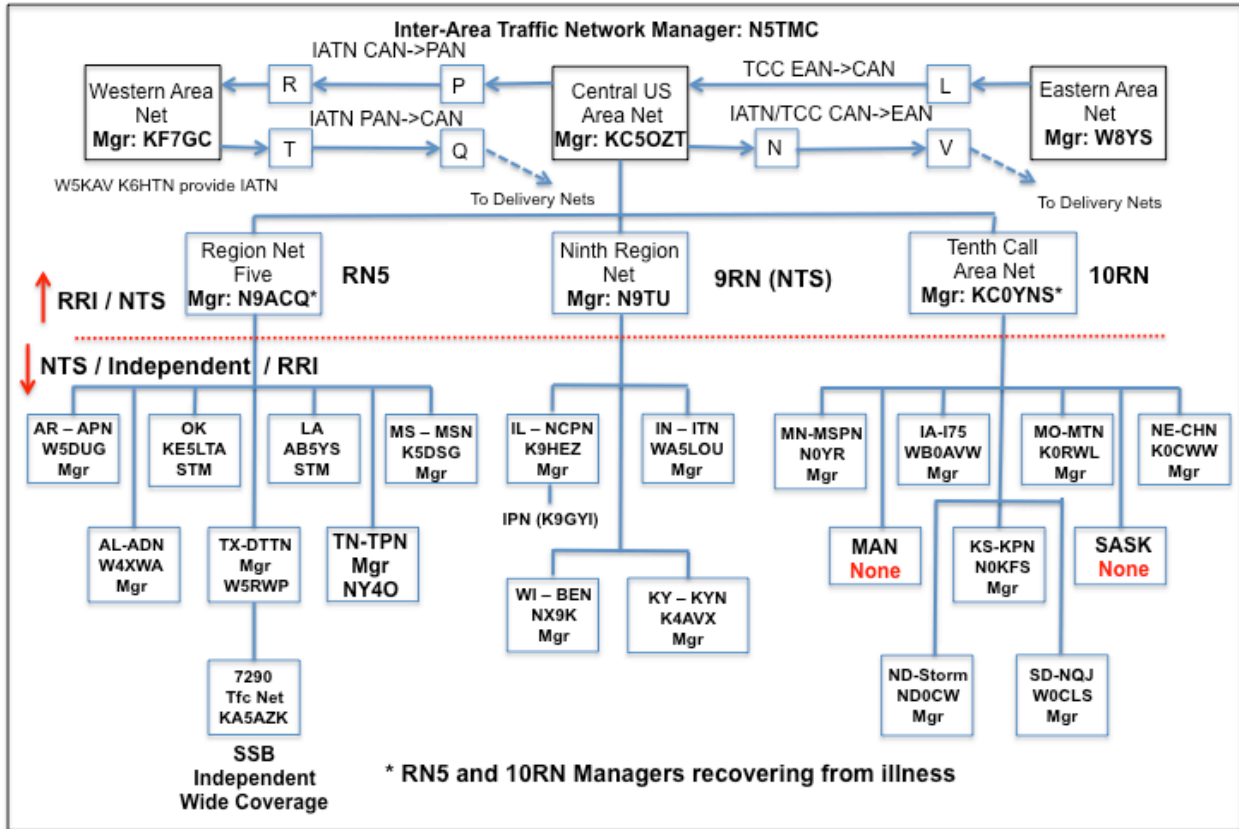


Figure 2 Cycle 2 Networks and Connections

Note that all functions above Region are RRI while the 9th Region Net remains NTS affiliated and the 5th and 10th Call Areas are RRI affiliated. Western and Eastern information is still TBD, although some Eastern TCC representatives are primarily NTS affiliated.

4.1 Inter-Area Traffic

The Daytime Inter-Area Traffic Network manager is N5TMC. IATN stations include N5TMC (IATN N), KF5IOU (IATN P,Q), KC5OZT (IATN Q), K6HTN (Western T/R), and W5KAV (Western liaison T/R). Alternates are KA5AZK and K5BMR. More information about Cycle 2 TCC/IATN is contained in white paper NTS-005 (see Section 2). Other information is TBD.

4.2 Central US Area Net (CAN)

The Central US Area Net meets Monday, Wednesday, and Friday on 14345 KHz at 1415 local. Alternate net frequency is 14340, and 14325 is also used for passing traffic. Net manager is KC5OZT. Another alternate frequency is 7243 KHz. Liaison to WAN and EAN is performed by TCC N, P and Q. Other liaisons are from EAN (TCC L, V), WAN (TCC R T), 9RN, 10RN, and RN5.

While CAN is comfortable with a 3 day a week schedule, given the current traffic level, should the need arise due to a disaster, the net would activate and remain active as long as its services were needed to handle the load.

Assigned Net Control stations are Monday: N9TU (IN), Wednesday: K5BMR (TX), Friday: KA5AZK (TX). KC5OZT, K5BMR, KE5LTA, and KA5AZK are alternate Net Control Stations. More information about CAN is contained in White Paper NTS-005 (see section 2).

4.3 9th Region Net

The 9th Region Net, managed by N9TU, meets Monday, Wednesday, and Friday on 7280 KHz at 1100 Central Time. Liaison to 9RN is performed by KY, IL, IN, and WI stations. Liaison to Cycle 2 CAN is also provided. Other information may be found in the NTS-9RN Yahoo Group.

As with CAN, the single 3 day a week schedule is sufficient for present traffic levels, but during a disaster, the net would be called up when needed to provide routing for the 9th region stations.

Net Control stations include N9TU, N9VC, and NA9L (TBR). WB9QPM is an alternate NCS as required, and provides relays when conditions are marginal.

4.4 Tenth Call Area Net

The 10RN net, managed by KC0YNS, meets Monday, Wednesday, and Friday at 1000 on 7280 KHz. NCS stations rotate around and are comprised of ND0CW, KC0YNS, N0YR, W0CLS, and NI0I (TBR). KC0YNS has been recovering from severe illness for some time so ND0CW and W0CLS have been sending in the net reports.

Liaison is maintained with the cycle 2 CAN net, primarily by KC0YNS. 10RN serves the following sections: MN, IA, MO, NE, MAN, KS, SASK, ND, and SD, although not all sections have liaison stations that report to 10RN (see the tables in section 4.6).

4.5 Region Net 5

Daytime Region Net 5, managed by N9ACQ, meets Monday, Wednesday, and Friday on 7280 KHz at 1025 local. Cycle 4 RN5 sends some traffic to DRN5 when it cannot be passed on the evening net. Liaison is maintained with cycle 2 CAN by KA5AZK, K5BMR, KF5TTN, and KC5OZT. NCS stations include KC5OZT, KA5AZK, and N9ACQ. N9ACQ is recovering from serious illness at present so KC5OZT has been keeping the net statistics.

4.6 Section and Local Nets

The following tables list section/state and local or independent nets that meet in the daytime. Each region is broken out separately. The majority of these are on SSB, but there are a few CW nets as well. Some ARES nets are also listed for information, although they are not officially part of NTS or RRI, many will also take traffic.

Table 10, Section and Local/Independent Nets in Cycle 2 Region Net Five

Name	Manager	Description
ADN (AL)	W4XWA	The Alabama Day Net meets at 1000 CT on 3965 KHz. The net is classified as an NTS daytime net but does not handle much traffic and book traffic is discouraged. ASN maintains informal liaison with ADN.
AEN	EC/SEC	The Alabama Emergency Net meets on 3965 KHz, alternate 7243 KHz at 1600

Name	Manager	Description
(AL)		local on Sunday. It is an ARES Roll Call net and does not handle NTS traffic. There is also a digital portion of this net meeting Sunday at 1530 local on 3570 KHz, alternate 7100 KHz.
APN (AR)	W5DUG	The Arkansas Phone Net meets Monday thru Saturday at 0600 on 3987.5 KHz. This net is reported to be an NTS affiliate but no liaison is maintained with any higher level NTS or RRI net per the SM W5RXU.
MKBD (AR)	W5JEP	The Mockingbird net meets on 3927 KHz at 1630 CT Monday through Friday. This is a roll-call net but will accept traffic per the SM W5RXU and NM. No liaison is maintained with higher level NTS or RRI, but cycle 4 RN5 traffic may be passed via the 7290 traffic net using liaison stations to 7290 from the TEX CW Net.
LA	None	No known NTS daytime nets but there are LA stations that check into the 7290 traffic net. A SSB net meets at 1800 local (see Cycle 4 information). (TBR)
MSN (MS)	KA5ICO	The Magnolia Section Net meets on 3862.5 KHz at 6 AM weekdays and 7 AM weekends and Holidays. Liaison is maintained with daytime Region Net 5 (TBR).
OK	None	There is no OK phone net in cycle 2 but the Sooner net meets at 1730 local. See Cycle 4 information. There are OK stations that check into the 7290 traffic net.
TPN (TN)	NY4O (TBR)	The Tennessee Phone Net meets during the evening and also at 0545 and 0800 on 3980 KHz (TBR). Other information is TBD.
DTTN (TX)	W5RWP	Daytime TTN is part of cycle 2. It meets M-Sa at 0830 local on 7285 KHz SSB. They accept all traffic. Liaisons from the TEX section net can bring incoming traffic either to DTTN or the 7290 Traffic Net, listed next.
7290 (TX+)	KA5AZK	The 7290 Traffic Net meets M-Sa at 1000 to 1200 local on 7290 KHz SSB and again on M-F from 1300-1400 local. This is an independent wide-coverage net based in Texas but with participation from many neighboring states (including KS, OK, AR, LA, MO). Although not formally a part of NTS, the net provides an outlet for all of Texas and parts of the other states and has liaisons with TEX. There are generally over 100 check-ins during the 2 hour morning session and the main focus of the net is handling traffic.

Table 11, Section and Local/Independent Nets in Cycle 2 Ninth Region Net

Name	Manager	Description
NCPN (IL)	K9HEZ	The North Central Phone Net meets Monday thru Friday 0700 CT on 3912 KHz. This is an NTS traffic net with liaison to Cycle 2 9RN.
IPN (IL)	K9GYI	The Illinois Phone Net meets Monday thru Friday at 1645 CT on 3857 KHz. The net purpose is traffic handling with liaison to Cycle 2 9RN. The net also meets on Sunday on 3940 KHz as a roll-call net immediately following the IL EMG net shown below.
IL EMG (IL)	K9HEZ	The Illinois Emergency Net meets on Sunday at 0800 CT on 3940 KHz. This is a roll call net but will handle traffic with liaison to Cycle 2 9RN.
ISN (IL)	WB9QPM	This net meets at 1800 local on 3905 KHz, so it is listed in the Cycle 4 table. However, liaison with Cycle 2 9RN is maintained so it is also listed here.
QIN (IN)	K0TQ	The Indiana CW net has a morning session at 0800 ET on 3535 KHz. No specific liaisons are maintained except incoming traffic from the night before will be handled when possible.
ITN (IN)	WA5LOU	The Indiana Traffic Net meets daily at 0830 ET on 3910 KHz LSB. Liaison is maintained with the Cycle 2 9RN net (TBR) and the evening ITN session.
IRTN (IN)	W9BGJ	The Indiana Radio Teletype Net meets daily at 0900 ET on 3585 KHz using standard 45 baud Baudot RTTY. Liaison with other nets is TBD.
KY	None	The Ohio Valley CW net once met at noon (and is still listed on the ARRL web) but folded several years ago when the manager became ill. No known daytime

Name	Manager	Description
		nets are now operating in Kentucky (per K4AVX).
BWN (WI)	W9IXG	The Badger Weather Net meets on 3984 KHz each morning starting at 0500 local time and concludes by 0715. Although their main function is collection of weather data for the NWS, they will list and handle any NTS traffic. Active members number about 140, but some are out of the section.
BEN (WI)	NX9K	The Badger Emergency Net meets daily at noon on 3985 KHz (alternate 7270 KHz). Liaison is maintained with WIN/L from the night before, Daytime 9RN, and the Wisconsin Side Band Net. All traffic is welcome as traffic is the primary function of this net. Approx 25 active members.
WARES (WI)	WB9WKO	The Wisconsin ARES/RACES Net meets Sunday mornings on 3967 and, although its main function is ARES/RACES exercises and discussion of ARES matters, any NTS traffic is listed and passed after the leadership reports. There are 20 stations active on this net.

Table 12, Section and Local/Independent Nets in Cycle 2 Tenth Call Area Net

Name	Manager	Description
I75 (IA)	K0YL	The Iowa 75 meter net meets Monday thru Saturday at 1230 CT on 3970 KHz. This is an emergency and traffic net, serving as a Section Net, but maintaining independence and having a board of directors with elected manager and NCS stations. Liaison to RRI is via cycle 2 TEN. Also see the Table 9 entry for the evening session of this net.
CSTN (KS)	TBD	The Central States Traffic Net is a Kansas (and 6 other state) wide area emergency and traffic net that meets Monday thru Saturday at 1230 on 7253.5 KHz. Reported to be an NTS affiliate but liaison information to daytime 10RN is unknown (TBR).
KPN (KS)	N0KFS	The Kansas Phone Net meets at 0645 Monday, Wednesday, and Friday on 3920 KHz. Reported to be an NTS affiliate but no liaison information is available. The net meets at 0800 Saturday and Sunday on 3920 KHz.
MAN	None	No NTS representation from Manitoba but there is a weather net that meets at 0830 on 3743 KHz per ND0CW.
MSPN/ N (MN)	N0YR	The Minnesota Noon Phone Net meets at 1200 daily on 3860 KHz. South Dakota normally also sends a representative to this net. Liaison is maintained with the evening net (MSPN/E).
PICO (MN)	KA0IZA	The PICO net meets on 3925 KHz from 0900 to 1100 Monday through Saturday. It meets in the winter also on 3925 from 1600 to 1700, Monday through Friday. It is not associated with NTS, but will handle traffic.
MO	None	There are no MO daytime nets although some MO stations (KC0M) check into the 7290 traffic net
NDRW (ND)	ND0CW	The North Dakota Road and Weather net meets Monday thru Saturday on 3935 KHz at 0830 local. This is affiliated with the NTS, and ND0CW, the STM and NM provides liaison with cycle 2 RRI 10RN.
40M (NE)	KL7MH	The Nebraska 40 meter net meets on 7282 KHz daily at 1300 local. It is primarily a roll-call and weather net, although it will handle traffic.
CHN (NE)	K0CWW	The Nebraska Cornhusker net meets daily on 3982 KHz at 1230 local. It is primarily a roll-call and weather net, although it will handle traffic.
MPN (NE)	KA0DOC	The Nebraska Morning Phone Net meets daily at 0730 on 3982. It is primarily a roll-call and weather net, although it will handle traffic.
WNEN (NE)	K0RRL	The West Nebraska net meets Monday through Saturday at 0700 on 3950 KHz. This is primarily a roll-call weather net, but it will handle formal NTS traffic.
NE	NF0N	NF0N is the STM for Nebraska. He reports there are no formal liaisons with the 10 th Call Area Net, either cycle 2 or 4, although they do receive traffic from WA0AUX from Iowa. He reported that book traffic is rare in the NE section and it

Name	Manager	Description
		would probably be handled but is not their preference. However, the NCW net does handle any and all traffic, including book traffic, and it is welcome there.
SASK	None	No NTS representation from Saskatchewan but there is a Weather net that meets at 0900 on 3753 KHz per ND0CW.
NQJ (SD)	W0CLS	The South Dakota NQJ Noon net meets Monday thru Saturday at 1215 on 3870 KHz. Liaison is maintained with Cycle 2 RRI 10RN by W0CLS and NI0I.

5 Digital Traffic Network (DTN) (formerly NTS Digital)

The former NTS Digital, or NTSD, system in both Western and Central Areas, as well as some of the Eastern Area stations (including the manager) withdrew from ARRL affiliation and has been renamed the Digital Traffic Network (DTN), which is affiliated with Radio Relay international. The hierarchy of DTN is simplified compared to the cycle 2 and cycle 4 networks. Essentially DTN combines the functions of the Inter-Area Traffic system and Central US Area Net along with some functions of the regional call-area nets. This leaves the section and local nets for either (or both) cycle 2 and cycle 4 to handle the traffic incoming to their domain. DTN operators also accept outgoing traffic from the sections for injection into DTN via liaison stations or their own participation in those nets.

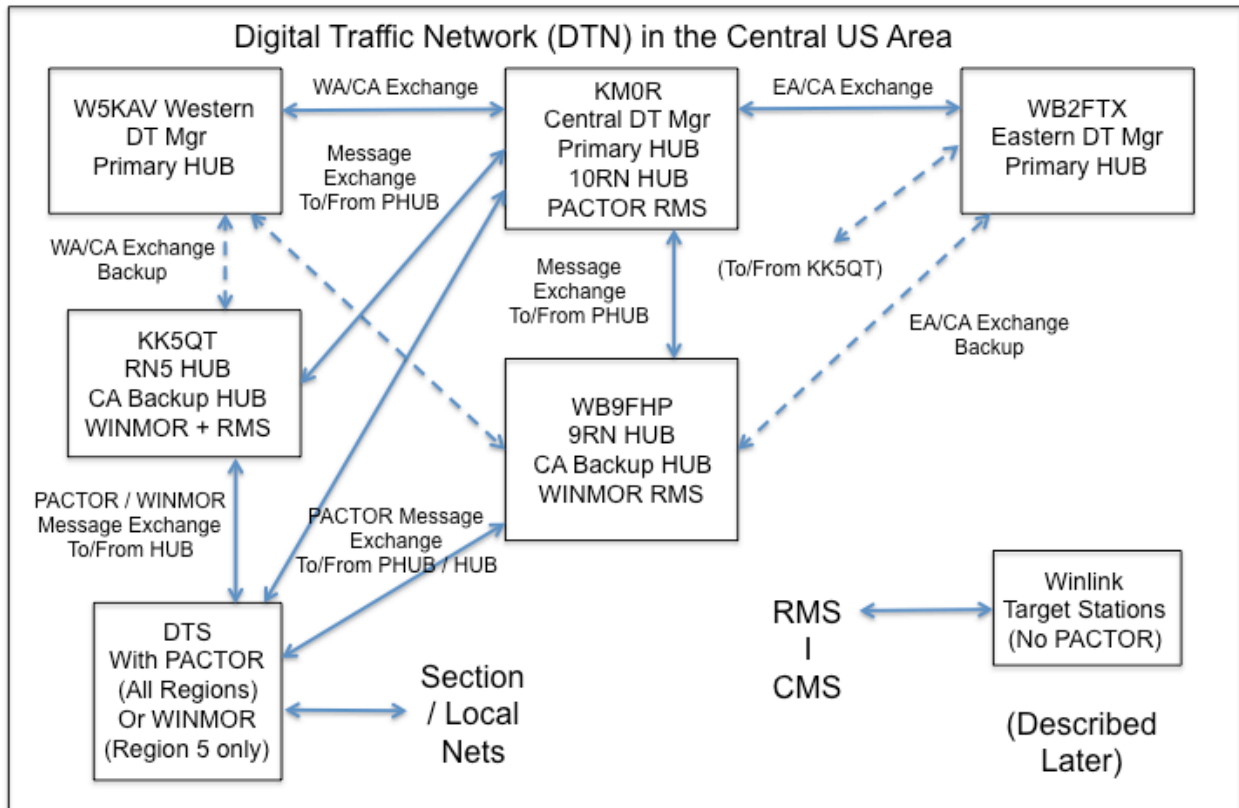


Figure 3 DTN Hierarchy in the Central US Area

5.1 HUB Operators (Primary and Regional)

5.1.1 Primary and 10th Call Area HUB – KM0R

KM0R is the DTN Central US Digital Traffic Manager (CDTM) and the Primary HUB Operator in the Central US Area as well as the HUB for the 10th Call Area. Note that the older term MBO, for MailBox Operator, has been replaced by the term HUB since the digital traffic system provides more services than just a mailbox. This station maintains a Pactor-1, 2, and 3 capable station with 24/7 computer controlled scanning of several frequencies on various bands as follows:

HUB Center frequencies: 03591.9, 03593.9, 07100.4, 07102.4, 10140.9*, 10142.9, 14097.9, 14109.9, 14112.4*, 14113.9*, using PACTOR 1, 2, or 3. Those frequencies denoted with an asterisk should be accessed only with Pactor-1 or -2 since they are outside the auto-control sub-bands.

KM0R also runs a Winlink RMS. HF center frequencies are 3597.0 KHz and 7104.0 KHz for PACTOR 3 and 7062.9 KHz for PACTOR 1 or 2. There are also VHF RMS ports for KM0R-10 on 144.970 MHz and 145.030 MHz using standard 1200 baud Packet protocols such as provided by most TNC's (e.g., Kantronics KPC-3) under control of a program such as AirMail. There is also a UHF RMS operating at 9600 bps on 441.050 MHz. KM0R does not support WINMOR connections.

A station wishing to connect on HF sends a connect request using a Pactor Modem and one of several programs designed to work with it, such as AirMail or RMS Express. The auto-scanning software pauses briefly on each frequency looking for a signal and stops when it detects a valid Pactor burst.

KM0R is the primary hub for connections with the Western Area PHUB and Eastern Area PHUB. The Eastern and Western Hubs will try to connect with KM0R. If they are not successful after a period of time, they will try to connect with WB9FHP or KK5QT. Thus, a redundant system results between the 3 stations' capabilities should they be out of service due to, for example, a widespread and lasting power failure or severe T-storms in the area forcing disconnection of antennas to protect the equipment.

5.1.2 Region 9 and Backup Area HUB Operator WB9FHP

WB9FHP is the DTN 9th Call Area HUB. The WB9FHP HUB maintains a Pactor-1, 2, and 3 capable station with 24/7 computer controlled scanning of several frequencies on various bands.

WB9FHP has an incoming Winlink service that will auto-route from Winlink into his system for messages with a specific Subject Line content. He also maintains a WINMOR Winlink RMS. His Pactor-1, 2, and 3 capable station auto-scans the following frequencies for connections with the HUB:

Center Frequencies: 03591.90, 03593.90, 07091.4*, 07100.40, 07102.40, 10140.90*, 10142.90, 10145.0, 14097.90, 14104.90, 14113.9*

* These frequencies should be accessed by Pactor-1 or 2 only, since they are not in the auto-control sub-bands

His WINMOR RMS station (WB9FHP-5) monitors the following frequencies for Winlink connections:

From 0200Z to 1300Z 3575.5 KHz (500 Hz mode); From 1300Z to 0200Z 7075.5 KHz (500 Hz).
Additional frequencies are TBD.

**** **NOTE** **** Stations using Winlink Express (formerly RMS Express) should configure it to NOT add //WL2K to the subject line. The presence of //WL2K forces manual-routing of the traffic.

Traffic sent to WB9FHP via Winlink, using any method, will be automatically routed from Winlink into DTN if the subject line contains the following:

RMS>PAC:<space>NTS:xxxxx@NTSyy

Where xxxxx is the 5 digit zip code and yy is the state abbreviation (e.g., 02351@NTSMA). The message body should contain only a standard MPG-format radiogram starting with the preamble.

5.1.3 5th Call Area and Backup Area HUB – KK5QT

KK5QT receives traffic for all 3 Texas Sections as well as the other 5th call area states of OK, LA, AR, MS, AL, and TN from WB9FHP and KM0R when they have traffic for region 5 each day. This HUB also serves as a backup to KM0R and/or WB9FHP if one of them is not operational. Due to the wide geographic separation between these stations, it is unlikely that a outage so large would occur, thus providing assurance of continued operation of DTN in the Central Area via radio-all-the-way.

KK5QT has a multi-mode station setup that provides HF PACTOR 1, 2, and 3 access to the HUB and Winlink, HF WINMOR access to both the HUB and Winlink, and VHF accesses both to the HUB and to Winlink. The station scans the following frequencies on HF, stopping when a valid PACTOR or WINMOR signal is detected. Note that certain frequencies will connect only as a WINLINK RMS while the others will connect with the HUB's traffic forwarding system.

Stations are requested to not use manual mode when connecting with the KK5QT HUB, and any station found using the LT or LN commands will be subsequently prohibited from using the system. All traffic is pre-routed by zip code to specific DRS/DTS from the HUB. WINLINK access is supported normally.

Table 13, KK5QT HF Center Frequencies and Modes

Frequency (KHz)	PACTOR	WINMOR	HUB BBS	WINLINK RMS
3587.5	1,2,*	500 Hz	No	Yes
3589	1,2,3	1600 Hz	Yes	No
3591	1,2,3	1600 Hz	Yes	No
7067.5	1,2,*	500 Hz	No	Yes
7091.5	1,2,*	500 Hz	Yes	No
7098.5	1,2,*	500 Hz	Yes	No
10141	1,2,3	500 Hz	No	Yes
10143	1,2,3	1600 Hz	Yes	No
10145	1,2,3	1600 Hz	Yes	No
14098	1,2,3	500 Hz	No	Yes
14111.5	1,2,3	1600 Hz	Yes	No
14112.5	1,2,*	500 Hz	Yes	No

* Only Pactor-1 or -2 should be used with these frequencies since they are outside the auto-control sub-bands. Similarly, the WINMOR bandwidth should be limited to 500 Hz on these frequencies.

VHF HUB access is on 145.090 using KK5QT as the callsign. VHF RMS (Winlink) access is also on 145.090 as KK5QT-10.

There is no connection between the Winlink RMS and the HUB BBS at this time. KK5QT relies on Region 5 stations to connect with the HUB via PACTOR, WINMOR, or the VHF port. The Texas Zip Code ranges of 75xxx, 76xxx, 77xxx, 78xxx, and 79xxx will all have routing tables for specific stations or groups of stations so that upon their connection, all the traffic awaiting them is automatically downloaded from the HUB. Other states are similarly handled where a Pactor 1 or WINMOR station exists. Most other states have only WINLINK Targets, and some have nothing (see Section 6).

5.1.4 HUB Software

KM0R and KK5QT use BPQ32 software for their HUBs. WB9FHP uses the AirMail program with augmentations that he has custom programmed. Currently conversion to use BPQ32 is underway.

KK5QT supports both PACTOR and WINMOR simultaneously, as noted in the above table. Although using BPQ32 software, KM0R does not have the added hardware needed to support both PACTOR and WINMOR. No schedule for changeover of WB9FHP to BPQ32 has been set since all HUB's are currently compatible.

5.2 Digital Traffic Stations (DTS)

For the purposes of this document, a DTS is defined as a station with Pactor (or WINMOR for KK5QT) capability that accesses one of the DTN HUB servers directly over-the-air to exchange traffic for that station's section or domain (which may encompass more than one section). Current DTS operators are defined in the table in the next section since they may also be Winlink Target Stations. Note that KB0OFD, the former CADC, had expanded the definition of DRS (now named DTS) to include WINLINK target stations, even those without Pactor (or WINMOR). DTN Managers are expected to continue this convention. The DTS is an official appointment, made only by the digital area and region managers, similar to the ORS appointment made by STMs.

The Pactor (or WINMOR) DTS stations, upon connection with the HUB, will download all message traffic for their assigned zip codes or sections. They will also upload any waiting messages to the HUB.

5.3 Winlink Target Stations

A Winlink Target Station is an operator who has agreed to accept traffic sent to him/her for a specific section or domain. This is an official, but informal (in the sense that it is not an appointment), designation controlled by the Digital Traffic Manager in cooperation with the regional HUB operators. The WINLINK Target may have Pactor to access one of the many HF RMS stations or may use WINMOR software to access those RMS stations who also provide that service. Additionally, a WINLINK Target may also have access to a VHF RMS station for traffic exchange or may simply use Telnet to access the WINLINK CMS servers directly via the Internet (Telnet-only stations are not currently considered for Target designation by the DTM). Note that Telnet-only access does not count for the purposes of traffic totals reported to the SM, STM or DTM. Only messages handled over-the-air may be counted.

Current Winlink Target Stations and PACTOR-capable DTS's, registered with the DTM, to whom messages are sent via routing tables are shown in the following table, which shows all states/sections, the current digital stations, and each station's capabilities (TBR).

Note again that the DT Manager has designated the DTS appointment to also apply to WINLINK Target Stations. It is the DTM, not the STM or SM, that makes DTS appointments.

Table 14, Central Area Digital Stations

State/Section	PACTOR	Target	Station and Description
AL	No	No	KI4ZZD DTS with WINLINK RMS access
AL	No	No	WA4ZPZ is a regular DTS via HF WINMOR during Winter only
AR	1,2,3	Yes	N9ACQ DTS with Pactor and WINLINK WINMOR RMS access

State/Section	PACTOR	Target	Station and Description
IA	1	No	K0VTT Region 10 / IA DTS with Pactor and WINLINK RMS
IL	No	TBD	KA9MZJ has WINLINK access via HF WINMOR; DTS and Target Station appointments pending
IN	1,2,3	Yes	WB9FHP Central Area Hub, Region 9 / IN HUB, WINMOR RMS Server
IN	1,2,3	Yes	N9LYA Pactor HF and VHF Packet RMS access
IN	No	No	N9SE has P2P WINMOR and Winlink
KS	No	No	KI0BK is no longer active as an HUB or DTS
KY	No	No - TELNET	Area code 502 (North Central KY) handled by W8QAS, others via 9RN liaison (TBR)
LA	No	No	N5NVP sometimes receives traffic from KK5QT via EMAIL. Currently no longer active on HF nets.
MAN	N/A	N/A	No DTS stations
MN	1	Yes	WO0W – Pactor 1 DTS / Target. N0YR MN DTS – Telnet WINLINK access
MO	1,2,3	Yes	KM0R 10RN/MO HUB WINLINK HF/VHF RMS
MO	No	No	K4WWV WINLINK RMS and Telnet access
MO	1,2,3	Yes	KC0YNS - Winlink and HF RMS also available. These run 24/7 on dedicated radios and computers.
MS	1,2,3	Yes	KA5DON – HF Pactor-3, WINMOR, and WINLINK Telnet
ND	No	No	ND0CW WINLINK Telnet also receives traffic from KM0R and on Cycle 2 10RN
NE	No	No	No DTS stations
OK	1	Yes	WD9GET has Pactor 1 – receives traffic from KK5QT
OK	1	No	KB5KKT DTS WINLINK Telnet only
OK	No	Yes	KE5LTA STM OK and DTS WINLINK Telnet only
SASK	N/A	N/A	No DTS stations
SD	No	No	NI0I WINLINK Telnet
TN	1,2,3	Yes	KV4MO and WA4VGZ have Pactor access to KK5QT and WB9FHP

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State/Section	PACTOR	Target	Station and Description
TX	1,2,3	Yes	KK5QT Region 5 HUB, HF Pactor and WINMOR and VHF HUB, VHF and Pactor and WINMOR RMS
TX	1,2,3	Yes	K6JT Pactor 3 to HUB, WINLINK HF WINMOR, WINLINK VHF RMS
TX	No	Yes	KA5AZK has WINMOR capability as a backup but receives traffic from KK5QT via TELNET for many Texas Zip codes. Manager 7290 traffic net
TX - S	1	No	K5AXW Pactor 1 to HUB, WINLINK HF Pactor to RMS and HF WINMOR access to WINLINK, Currently inactive due to moving
TX - S	No	No	NA5YO curenly has only TELNET. Moved from San Antonio area to gulf coast.
TX - N	1	No	KF5IOU – Pactor 1 to HUB, WINMOR and TELNET, shares 75xxx zip codes with KA5AZK (TBR)
TX - N	No	No	KF5TTN – WINMOR and TELNET, shares 76xxx zip codes with KA5AZK (TBR)
TX - N	1	Yes	KE5YTA – DFW, Pactor-1, WINMOR and TELNET, VHF RMS
WI	1	Yes	N9VC / NX9K, Pactor HUB access, HF and VHF WINLINK RMS
FL-N	No	Yes	W4DLZ is the cycle 4 RN5 manager, listed for completeness. FL is part of the Eastern Area, but North FL has supported RN5 for many years and the FL CW net sends liaisons.

6 System Analysis and Low Resource Identification

This section will first summarize representation in each state via any of the RRI Cycles including DTN. Those states with no representation via a given mode will be highlighted and areas with weak representation will also be noted. The following section will address the low participation states and (hopefully) suggest some possible workarounds with input from RRI Staff members and STM/SMs.

6.1 State Representation by Region

Notes:

1. Information in these tables is based on the foregoing detailed net information. It is hoped that when TBR and TBD entries are updated by STMs, NMs, and staff members that many of the liaison unknowns will be resolved favorably and status will change in the following tables.
2. The designation of "Part" indicates that while it is possible for a net to interface with RRI, either the net does not handle much traffic or has no documented liaison with the rest of RRI (this may change as noted above).
3. For DTN, P indicates a Pactor or WINMOR station and T indicates a Winlink Target Station is available, while TN indicates Telnet-only representation (rarely used as a Target).

6.1.1 Region 5

Table 15, Region Net Five RRI Representation

Section	Cycle 2	Cycle 4	DTN	Comments
AL	Yes	Yes	T	SSB Net accepts book traffic. Cycle 4 and digital are OK.
AR	Part	No	P T	SSB Net refuses all book traffic. Single liaison to Cycle 4 RN5 resigned as of Jan 1, 2014. DTS station has no outlets for book traffic (but accepts local calling area traffic).
LA	Yes	Yes	TN	Daytime RN5 representation, single liaison to evening RN5. Evening net no longer active. TELNET / EMAIL only at present.
MS	Yes	Yes	P T	Good Cycle 2 coverage. Cycle 4 limited to a single station going to RN5. Digital via PACTOR DTS.
OK	Yes	Yes	P T	Evening SSB net and wide-area 7290 in cycle 2. Evening traffic to 7290 net with TX liaisons accepting. PACTOR digital DTS.
TN	Yes	No	P T	Daytime Tennessee Phone Net liaison to higher level RRI. No Cycle 4 RN5 liaison, Two DTS / WINLINK targets.
TX	Yes	Yes	P T	Full and redundant coverage of all functions, all cycles.

6.1.2 Region 9

Table 16, Region Net Nine RRI Representation

Section	Cycle 2	Cycle 4	DTN	Comments
IL	Yes	Yes	T (TBR)	Cycle 2 SSB nets have liaison with daytime 9RN as does the Cycle 4 ISN.
IN	Yes	Yes	P T	Full and redundant coverage
KY	No	Yes	TN	There are no cycle 2 section nets but liaison with daytime 9RN is maintained with traffic routed to the evening nets. One area code handled by a WINLINK Target W8QAS.
WI	Yes	Yes	P T	Full and redundant coverage

6.1.3 Region 10

Table 17, Region Net TEN RRI Representation

Section	Cycle 2	Cycle 4	DTN	Comments
IA	Yes	Yes	P	Cycle 2 net liaison to higher level RRI has been verified by K0CY, the SM.
KS	Part	Yes	P	Cycle 2 Section and Wide-Area SSB nets are active in the area but liaison to higher level RRI or DTN is unknown
MAN	No	No	No	Section is completely inactive in NTS / RRI but W0CLS and ND0CW will take traffic when needed. Some MAN stations check into the ND DATA net and there are a couple SSB weather nets that will accept some traffic.
MN	Part	Yes	P T	The MN Noon SSB net does have liaison with the evening NTS net but cycle 2 liaisons are unknown. Pactor 1 digital station WOOW is a WINLINK Target.
MO	No	Yes	P T	No daytime MO nets, but the 7290 net (TX) does provide some coverage
ND	Yes	Yes	TN	No cycle 4 CW net but active SSB section net with liaison to cycle 2 of the 10 th Region Net. No formal DTN liaison. Telnet-only WINLINK.
NE	Part	No	No	No formal liaison with Cycle 2 Region 10 nets, daytime nets are not part of NTS.
SASK	No	Part	No	Section is not active in NTS but VE5SDH is learning and checks into TEN on occasion. W0CLS and ND0CW will take traffic when needed. There are 2 SSB weather nets

Section	Cycle 2	Cycle 4	DTN	Comments
				documented that will take some traffic.
SD	Yes	Yes	TN	No cycle 4 CW net but active SSB section net with liaison to both cycles of the 10 th Region Net. No formal DTN liaison.

6.2 Coverage Problems and Options

Note that the main purpose of this white paper is to encourage thought about how to improve the operation of traffic flow in the Central Area. One thing that should be kept in mind is that no matter how good or poor the upper levels of RRI function, without good section nets (and especially SSB nets with wide participation), the system is not very useful. Special attention to linking, via liaison stations, the upper levels (IATN, Area, and Region as well as DTN) to origination and delivery nets in each section is of primary importance.

While DTN essentially “echoes” the functions of IATN, Area, and Region operations, placing traffic directly into the section level, the same constraints apply – section and local nets must be tied to DTN to complete the delivery process.

The vast majority of traffic currently handled is generated by a few dedicated operators. We owe them thanks for keeping the system supplied with traffic. It is a lot of work, particularly identifying telephone numbers, which have become increasingly difficult to track. Many people have given up their classic landlines and have only cell phones, which are not yet easily found. Residential movement also makes this task difficult. As a result, return service messages often indicate a disconnected number.

Thousands of messages flow through DTN each month, per digital manager reports. At best, a few hundred flow through cycle 2 and cycle 4. This is because the bulk originators predominantly use the DTN system to inject the traffic. This is understandable given the ease with which it can be done in a short amount of time, but it also makes it more important to have either DTS or WINLINK Target Stations in each section that are capable of bringing that traffic to the section and local delivery nets.

The proliferation of DTN usage may have had some negative effects on the traditional RRI, particularly cycle 2 upper levels. Cycle 2 CAN has gone to operation only 3 days per week. The primary reason being there was simply not enough traffic being brought to warrant 7 day operation as it once was. Only incoming eastern traffic was essentially being handled at the time operation went to MWF only. The Cycle 2 Ninth Region Net followed CAN in dropping back to only MWF operation, which makes some sense since no CAN liaison would be possible on other days. Fortunately, the 9RN digital hub, WB9FHP, along with others in the region bring digital-received traffic to 9RN for distribution. Kentucky particularly benefits from this since there is only 1 digital station who handles one area code there. This is a good example on how cycle 2 and DTN can augment each other’s functions that may be useful in other regions (and cycle 4) as well.

Both daytime 10RN and RN5 have also gone to 3 days, echoing CAN. Inter-region traffic is passed on these nets and they do have digital liaisons that bring incoming traffic for distribution.

Cycle 4 continues to operate daily, although as can be seen from the analysis, section participation is lacking on the region nets, and some regions have difficulty staffing CAN liaison stations.

One might be tempted to say why not just eliminate cycle 2 and cycle 4 upper level nets and use only DTN? Not a good idea. While DTN does handle a lot of traffic quite efficiently, it is still lacking in full

participation by all sections, many of which DO have good representation on cycles 2 and/or 4. Furthermore, in the event of a major outage over a wide area (such as happened in Hurricane Katrina), the lack of power and Internet connectivity may render many digital stations silent while lower-power simple CW and SSB stations can still function on battery or other emergency power. Remember that NTS / RRI is truly a backup to national communication systems – when all else fails, it is there. Thus it is critical to keep all levels of NTS / RRI functioning at some reasonable capacity so that trained operators are available when needed.

Tying NTS into local ARES nets and ARES operations is something that has not been well done, other than in a few sections / counties. Some sections have vibrant ARES operations but most have very little cross-linking of ARES with NTS. This should also be considered when thinking about how to improve NTS operation and functionality. NTS is not simply a couple of cycles and some digital stations; it must also include local and ARES nets with attendant liaison at least to the next higher level of RRI.

It would then appear that the thrust of helping sections with low NTS participation may be best served by recruitment of “multi-mode” operators who have digital and also either voice (SSB/FM) and/or CW expertise in handling traffic in order to bring the traffic to section and local nets where it can be delivered. Some thought should also be given to purposely injecting some of the bulk traffic into both cycle 2 and cycle 4 by those originators who have that capability. This has in fact recently been done by some stations, which has helped keep these cycles active. A low volume of injected messages into (preferably) the higher levels of cycle 2 and 4 (IATN, Area) versus sending it all via DTN may be of benefit.

Unfortunately, there are some operators, and even entire sections, who do not want to handle bulk traffic of any sort. There is little that can be done about that other than find operators who ARE willing to do the job NTS / RRI were designed to do or convince the ones who object that it is for the better good. Training is needed primarily at the section and especially local level in handling traffic, not for the RRI or DTN liaison stations. But some flow through the upper levels above section is also of benefit, if nothing more than to preserve the Region to Section to Local liaison contacts.

Hopefully the RRI Coordinators along with NMs, STMs (or SMs) can use the foregoing analysis to determine how best to help their area of responsibility. Since each state/section has its own needs and capabilities, there can not be a single “solution” that covers all.

6.2.1 Summary of Sections with Limited or No NTS Activity

There are only 4 sections with full cycle 2, cycle 4, and DTN coverage – TX in Region 5, IN and WI in Region 9, and IA in Region 10.

Other than the Canadian MAN and SASK sections, which have no documented liaison to any cycle or DTN, every section has at least some NTS representation. A work-around for the Canadian sections makes use of the North Dakota DATA net (for MAN representation) and efforts by W0CLS and ND0CW to take traffic to the Weather nets in those provinces. Note that ND0CW reports that the VE4 and VE5 stations tell him they have no path to Eastern Canada or to VE6/VE7, although VE7 is known to be active on RN7.

Emphasis should be placed on helping those sections with “Yellow” and “Red” status improve their capabilities. The sections most in need aside from MAN and SASK include AR, LA, TN, KS, MN, ND, and NE, which have marginal representation, in some cases by only a single liaison station to the higher level net and/or only Telnet representation to DTN, which becomes unusable during a power or Internet outage.

6.2.2 RRI Central Area Staff and Section Traffic Manager Suggestions

Since some sections have refused to handle bulk traffic, they have lost operators due to inactivity and their overall ratings have decreased.

Regards and 73, Rodney Baker W5DY, South Texas Section Traffic Manager (since January 2008).

Just for the record, I ask the question, why do the sections mentioned in the paper refuse bulk traffic? Why do sections have one or none stations? Any serious look into NTS status must answer this question and deal with the increasing resistance to bulk traffic and assess its true impact on NTS.

One point mentions bulk traffic removal caused ops to leave nets. Maybe so, but the reverse is certainly true. Many ops have quit NTS activity to avoid it.

73, Benny Owens K5KV, Former TCC Director, Cycle 4

Observations: A large number of operators in ND refuse to handle bulk traffic, the license expirations or requests for activity sent out when FCC has upgrade of a license status. At this point, over half the state is unreliable unless one of us uses a cell phone. There are about 5 amateurs across the state willing to take traffic.

Given the aging population of amateurs, I am attempting to reach new amateurs through their introduction to amateur radio. But the number of new hams in ND is slim!

Dave Heintzleman, ND0CW, STM ND

As I have stated before one MAJOR failure is that the NTS (now RRI) staffs have no representation by their customers, Section STM's or Section SEC's.

Over the total of 548 messages through my station this year, 232 were from WB5NKD, over 42 %, and either serviced back or deleted as I informed that station. Another 199 were serviced back to originator because of NO OUTLET due to local net restrictions (see Razorback Net in Table 7). So 431 of 548 were Book messages. This is about 79% of traffic through my station. Only 24 were accepted by the local net and another 9 accepted by other section nets. Just about 10% of all messages were deliverable to the local area. The other 10% were messages relayed on the cycle 2 RN5 net. I submit it might be interesting to get the percentage of bulk messages that actually are delivered vs. serviced back. Those are the real number that NTS should be looking for, not the total messages through the system.

While we are at it, why is it required for me to route all DTN traffic through my Area HUB/DTN station and not directly to the destination AREA HUB/DTN station? This is one reason the DTN system is unusable for EMCOMM. Under the present system I would consider using NTS/DTN for H&W messages only. Where is the Target Station database and when will it be available for use by DTS and target Stations? Could this be a major reason that ARRL is reporting on MARS activities? Is this a case of cause and effect? Could NTS realistically operate 24/7 if necessary for a major EMCOMM event?

73, Bill, N9ACQ, ARRL Mentor EC-001, Owner "Loading WINLINK User Programs" Yahoo group, Manager RN5 Cycle 1 / 2, NM Delta ARES Emergency Net, ASM Arkansas Section, Section WINLINK Target Station, VP Respond ARC, Member Craighead Co RACES.

- (1) One common activity on Cycle 2 Central US Area Net is for the NCS to coordinate a larger volume of traffic for passage on WINLINK or DTN via checked in liaison stations. This exponentially increases traffic flow, minimizes coordination efforts and spectrum use (vs. sending stations off frequency for an extended period to pass via voice). This is helpful if one region accepts a larger volume of traffic and allows a faster disposition by the Region Rep on Region/ Section/Local nets.
- (2) I might concur that the use of DTN may be taking traffic away from Cycle 2/4 but the reason may be more due to a lack of coordination and liaison with DTS stations for such nets. An example is for my DTS taking LA traffic as there is no DTN LA DTS that could bring it to local nets. In fact, having more

than one ORS/DTS available in the Sections and in adjacent Sections supports higher reliability and timeliness of traffic delivery.

- (3) Inter-region traffic on RN5 has been discouraged to better utilize the CAN Cycle 2. However, it is still effective if traffic arrives after the CAN Cycle 2 net.
- (4) I concur with the reasoning for not to eliminate Cycle 2 and 4. The depth of having the additional nets support participation by non-DTS or non-WINLINK capable stations with additional participation time and coverage. This is an available resource for EmComm and H&W applications notwithstanding the added support during poor propagation conditions.
- (5) The topic of “bulk” traffic is a difficult one. Having personally delivered such “bulk” traffic only to be negatively criticized by the recipient (for multiple reasons) discourages one from such activity. There is also the challenge of the evolving telephone infrastructure that results in a high percentage of “ARL Sixty Seven” return messages. While I am sympathetic of these problems, it is contrary to the stated purpose of NTS to not handle “bulk” traffic. The ORS/DTS should be committed to moving the traffic no matter what the purpose of the traffic is. Otherwise, the mission is defeated and NTS becomes subjective. I would suggest encouragement and feedback to such “bulk” traffic originators to perhaps modify their messages from time to time and to perhaps distribute the traffic in a less concentrated volume. For example, I have found that “Message Relay Stations are needed” to new Amateurs generally means nothing to them as they are completely unfamiliar to what NTS is.
- (6) Reference Comments from Rodney and Benny – I would add that many Section NETs and even on the Region Net in RN5 have stations that check into the net that cannot under any circumstance take traffic. This ultimately defeats the purpose of the NET and generally results in the net diverging into a “social” net or such stations providing “relay” services. For example, I have been “relayed” into NETs by such stations after acknowledgement by NCS and been assigned off frequency to pass traffic. Such “relay” stations also typically double with NCS or stations attempting to check in during the acknowledgement making the NCS station’s task more difficult and consuming more time. Processes such as stricter NCS operation, encouragement of stations to become traffic capable and perhaps a clearer understanding of the purpose and procedures of the NET (with a statement that stations are expected and “encouraged” to be able to take traffic) might help. I would venture a guess that a contrary response would be that we would “lose” operators but the fact is we don’t have a functional operator in the first place if the NET purpose isn’t served.
- (7) I concur with Bill, N9ACQ’s concerns about the DTN routing restrictions. There have been many times I have been unable to reach the DTN CAN HUBs due to propagation issues or the DTN CAN HUBs are passing a high volume of traffic. Having a message get stuck in a HUB waiting for automatic sending cycles to other HUBs is not only redundant but less reliable and takes more time than direct “mesh” connectivity to regional HUBs from DTS stations. This also supports receiving DTS stations to promptly present traffic on respective Cycle 2/4 nets. In TX, having a local HUB addresses this to some degree but if our goal is to move traffic the fastest and most reliable way possible, we should consider a more integrated, distributed traffic architecture.

73, Bill K5AXW, Cycle 2 CAN NCS, Texas DTS

TBD

7 Document Specifics

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7.1 Acronyms

Acronym	Definition
CAN	Central Area Net
Cycle 2	Indicates daytime nets meeting primarily before 1700 local
Cycle 4	Indicates nighttime nets meeting primarily after 1700 local
DRS	Digital Relay Station (superceded by DTS in DTN)
DTN	Digital Traffic Network (formerly NTSD)
DTS	Digital Traffic Station (DTN liaison station)
EAN	Eastern Area Net (Part of what remains of NTS, see RRIE)
HUB	Automated node of the DTN
IATN	Inter-Area Traffic Network (formerly TCC)
MBO	Mail Box Operator (DTN Node – now termed HUB)
NTS	National Traffic System of the ARRL
PHUB	Primary DTN HUB in a given area
RN5	Fifth Region Net (CW and SSB)
RRI	Radio Relay International
RRIE	RRI Eastern area net
TBD	To Be Defined
TBR	To Be Reviewed or To Be Revised
TBS	To Be Specified
TCC	Transcontinental Corps (replaced by IATN in RRI)
TEN	Tenth Region Net (CW)
TEX	Texas CW multi-section Net (WTX, NTX, STX)
9RN	Ninth Region Net (CW and SSB)
10RN	Tenth Region Net (SSB)
WAN	Western Area Net (formerly Pacific Area Net)
WINLINK	Winlink digital system – See Winlink.org