Evolution of the National Traffic System NTS 2.0 Briefing

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Future of Traffic Handing Sub-Committee
Goals and Structure

- Goals
  - Create a vision for the future of traffic handling and a plan to get there
  - Identify issues with current system, create plans to address them
  - Outline support needed from the ARRL for successful execution of plans
- Current Members
  - Bud Hippisley, W2RU
  - Marcia Forde, KW1U
  - Ethan Hansen, KC1OIP
  - Brent Walls, N9BA
  - Cory Golob, KU1U
  - Phil, Temples, K9HI
  - Josh Johnston, KE5MHV
  - Fred Kemmerer, AB1OC (Chair and liaison with the Emergency Communications – Field Service Committee)
- We are expanding group to as we transition to implementation
- Core steering group meets weekly for 1 hour

Traffic Handling Current Situation

- Traffic handlers practice their art 365 days each year
  - Traffic handlers are well trained and practiced (ex. directed net skills)
  - Multiple modes and paths through network
- Changing technology has provided public with alternatives for message communications
  - WW low-cost calls, text messages, email, social media, …
- Today's traffic is mostly goodwill in nature
- Some public agencies have created their own backup messaging systems
  - There are serious questions as to the reliability of some of these systems in certain important classes of emergencies
- It is essential to engage new Hams in traffic handling
- Wide-area messaging drills (ex. MARS exercise) have been both successful and motivational for the traffic community

Traffic Handlers are very dedicated to what they do.
Many practice their art 365 days a year.

NTS 2.0
Vision for the Future

- We will build upon and expand the National Traffic System (NTS) to fulfill an expanded mission which includes:
  - Reliable wide-area support for emergency communications in support of, and for use by, Government Agencies, Non-Government Organizations (NGOs), the public, and other Amateur Radio Emergency Services
  - Providing easy, direct, and modern access for Agencies, NGOs, and the general public to utilize the NTS to source and receive traffic
  - Developing and delivering the training and certifications necessary to meet Government Agency and NGO needs and performance standards for handling critical traffic
- The NTS has always been a training ground for new Hams to develop their skills. We will revitalize and expand this important element to include hands-on programs that:
  - Provide help and training to assist newly licensed/upgraded Hams to get on the air and learn about EmComm and NTS
  - Specific training activities designed to recruit, train, and enable new Hams to participate in NTS
- We will expand the networks, modes, and methods that we support for handling traffic to include modern technologies and additional content types including file and multimedia traffic

NTS 2.0 Framework

Expanded Traffic Nets support higher performance standards and new types of Traffic (ex. multimedia)

Federal/State Agencies (ex. FEMA)

Level 3 – National Disasters
Wide-Area EmComm event
(Internet and Standard Comms. largely unavailable, broad computing infrastructure damage)

ICS213 Traffic Formats Included and Optional AUXCOMM Training as Required (as determined by served Agencies)

Non-Government Organizations

Level 2 – Regional Disasters
Regional EmComm event
(Partial Internet and Standard Comms. loss)

Increasing Training Requirements, Delivery Reliability, and Shorter Response Times, Station Reliability Standards.

Current Traffic Handling Model

Level 1 - Goodwill and Public Service Traffic
(Internet available for remote access to RF nets and as potential traffic off-ramp)

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NTS 2.0 Digital Traffic System

Users include Federal, State, and Local Agencies, NGOs, Amateur Radio EmComm groups, and the public

Level 2 and 3 systems can utilize direct digital interfaces to originate and deliver traffic

Next Generation Digital Traffic System

Level 3 DTS – RF & IP based digital system (ex. AREDN) which is capable of originating, transporting, and delivering large file and multimedia traffic including live video

Extension of the Current System

Level 2 DTS – All digital system using RF & Winlink/DTN to originate, relay, and deliver text and small file attachment traffic

All Digital Systems with direct IP interfaces

Hybrid system using digital & analog relays

Additional standards, Interfaces, traffic protocols, access controls, documentation, and training to be developed

Current Hybrid Traffic Handling System

Level 1 DTS - Winlink e-mail and DTN systems used as a component of NTS 2.0 for relaying short, text-based message traffic

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NTS 2.0 Vision
Additional Details

- A major focus of NTS 2.0 will be to improve and expand the ways in which we deliver and originate traffic

- NTS 2.0 will serve as a wide-area message communications service for ARES, SKYWARN and RACES

- Agencies and NGOs including FEMA, CISA, The American Red Cross, The Salvation Army or SATERN, and MARS are foundational partners in our plans

  - Plans include joint discussions and exercises with other Amateur Radio EmComm groups and State and Local agencies

- We need to create and deploy an updated training programs for NTS 2.0 traffic handlers and leaders

- Programs to create incentives and recognition for volunteers will need to be enhanced and updated

- Implementation of NTS 2.0 will be the responsibility of the Sections, the Section Field Organizations, and Traffic Handlers

  - Section Managers and their STMs will be responsible for implementing NTS 2.0 within their section.

NTS 2.0 Implementation Plans

Implementation Working Groups

EmComm / Agency Engagement, Documentation, & Procedures

- Agency Interfaces
- ICS message standards & protocols
- AUXCOMM Training Req.
- Credentialing requirements
- Procedures & Documentation
- Use of redundant paths in emergencies
- Regional as well as national info. dissemination
- Procedures and contacts to utilize the NTS (ex. ARES)

Digital Networks 2.0

- Level 1 – 3 Digital Networks
- End-to-end protocols including delivery conf. & perf. meas.
- Methods for supporting Multimedia & Streaming traffic
- Standards, Documentation
- Nationwide coverage & deployment plan
- Winlink <-> DTN interworking, proactive DTN to CW/SSB failover

Recruitment, Training & Online Presence

- Outreach incl. at Tech exams
- Coordinate training dev., utilize ARRL Learning Center
- Internet presence, public outreach & promotion
- Partnerships (LICW, CWops, etc.)
- Recognition & incentives incl. Net Control Stations
- Beginner & practice nets
- Traffic handling for new Techs via VHF nets
- Traffic Handling Contest Sprints
- Nation-wide NTS exercises
- Toolkit for recruiting and gameplan to shore up staffing
- VOTA-W1AW activity to originate traffic
- New ham NTS info kit for VEs

Updated Access & Delivery Methods

- Public Access
- Numbered message standards
- Unification of radiogram format variations
- Expand delivery methods
- Direct IP, SMS, Web, & Agency Intf.
- Security/Access Controls
- Documentation & APIs
- Automated delivery notifications & confirmations

Performance Standards, Assessment, & Activity Reporting

- Delivery confirmation methods & message tracking
- Delivery time/reliability standards & measurement
- Standardize activity reporting
- Measurement plans including self measuring traffic
- Improve NTS 1.0 performance
- Message prioritization & bulk traffic

NTS 2.0 Implementation Plans
Staffing and Use Cases

- We will define the details of the NTS 2.0 via a collaborative effort led by five Implementation Teams
- The Implementation Teams will be staffed by volunteers who handle traffic
  - Current sub-committee members serve as a steering and review team and will be part of teams
  - We are inviting folks to volunteer through our NTS 2.0 briefings which include Section Managers and Field Staff
- We will focus our implementation work across the Teams around specific use cases. Some starting points are covered on the next chart.
- We will deploy programs that support the use cases as soon as they are ready
- Implementation of NTS 2.0 will be the responsibility of the Sections, the Section Field Organizations, and Traffic Handlers
  - Section Managers and their STMs will be responsible for implementing NTS 2.0 within their section.

NTS 2.0 Implementation Plans
Teams and Use Cases

Implementation Use Case	Recruitment, Training & Online	Access & Delivery	Performance, Standards, & Reporting	EmComm Doc, & Procedures	Digital Networks 2.0
Standards & tools for reporting activity & NTS perf.		X	X	X	
ICS message procedures & training	X	X	X	X	X
Delivery time/ reliability standards & meas. including self measuring traffic		X	X	X	X
Addl. methods for delivering traffic to recipients		X	X		
Recognition & incentives programs	X	X	X		
New ham outreach & recruiting programs	X			X	X
Plan to measure & secure nationwide DTN coverage			X		X
Procedures and contacts for other EmComm groups	X			X	

Suggested Initial Use Cases

NTS 2.0 Implementation Plans
Implementation Working Group Facilitators

Recruitment, Training & Online Presence (Cory KU1U)

EmComm / Agency Engagement, Documentation, & Procedures (Bud W2RU)

Performance Standards, Assessment, & Activity Reporting (Marcia KW1U)

Updated Access & Delivery Methods (Phil K9HI)

Digital Networks 2.0 (Fred AB1OC)

Plans for launch

- ✓ Finalize core team additions and implementation team facilitators
- ✓ Determine recommended initial priorities, process, and operational expectations
  - Proposed initial top 3 use cases
- ✓ Kickoff meeting for implementation team volunteers
  - Meetings scheduled for Nov. 20th @ 1 pm and Nov. 22nd @ 8 pm (links available from KW1U)
  - Request for short bios and team preferences and top priorities
- ➢ Based upon volunteer input, finalize priorities, process, and operational expectations
- Launch implementation teams
  - Saturday, December 17th at 1 pm ET
- Expect implementation teams to meet weekly for 1 hour

ARRL Routine Traffic Origination
A program to support NTS 2.0 deployment

- The ARRL will routinely originate traffic as part of our NTS 2.0 program
  - Traffic will consist of information and reports for general interest to the traffic community
  - This traffic will be sent periodically – first round was sent in October 2022
  - At least one quarter of this traffic will be sent using the ICS213 format to exercise this aspect of the NTS 2.0 plan
- The traffic will be originated by the Director of Emergency Mgmt. or their designee
  - The traffic will be originated using a mix of Digital, Phone, and CW formats and will be transported via RF-based transmissions
  - Traffic will be injected into the NTS from different sections to spread the workload and practice opportunities
  - Messages will be sent to all ARRL STMs, Section Managers, Vice Directors, Directors, the CEO, the President, and the First and Second VPs
  - The traffic may be handled and relayed using all available NTS 2.0 modes including CW, Phone, and digital methods
  - Final delivery methods may include Internet-based email as well as other delivery methods, but traffic should traverse the NTS via RF until it reaches its destination
  - We will ask the delivering Traffic Handler confirm delivery to the recipient
    - Confirmations will be sent back through the NTS to measure system performance

Possible Partnership with CWops

- Working with Joe Fischer AA8TA at CWops
  - Kate Hutton K6HTN is also assisting
- Elements of a possible partnership include:
  - Pilot program with 3-4 CWops advisors followed by broader program
  - Briefing package/zoom meetings with pilot advisors
    - What is Traffic Handling?
    - How does it help new CW operators?
    - What are the available nets and how does one participate?
    - Specific practice/mentoring NTS nets for new CW operators
  - Offer a "short course" on how to do traffic handling as part of CWOps (prelude to beginning a practice)
- NTS operators to sponsor new CW operator training nets (last item above)
- A team is leading effort on our side – Ethan KC1OIP to lead
  - Henry WA1VAB and John AJ1DM assisting along with Kate K6HTN and Ethan KC1OIP

Sharing and Reviews

- We conducting a series of division level reviews of our NTS 2.0 plans
  - ✓ New England Division – Complete (July 23rd, 11 am; July 30th, 11 am)
  - ✓ Central Division, Great Lakes Division, Atlantic Division, Roanoke – Sept. 10th/ Sept. 12th
  - ✓ Rocky Mountain, Dakota, and Midwest – Oct 8th & 10th
  - ✓ Pacific, Northwestern, and Southwestern – Oct 24th & 29th
  - ✓ Hudson, Delta, Southeastern – Nov. 12th & 14th
  - ✓ Final briefing session including West Gulf – Dec. 10th & 12th
- NTS 2.0 plan reviews (Target 1-hour meetings on zoom)
  - Share vision and implementation plans as well as how we got there
  - Solicit feedback and build buy in and support for our plans
  - Recruit folks to help us with implementation
- Goal is to identify 30 – 40 Traffic Handlers to work on implementation
  - Goal is to launch working teams by the end of the year

Brent Walls, N9BA is taking the lead in organizing these sessions

Next Steps

- ✓ Complete reviews of NTS 2.0 plans to refine plans and build support

- ✓ 4Q 2022 kickoff for implementation teams
  - Implementation will focus on early realization of important operational capabilities

- ➢ We need three key inputs from each volunteer **by Tuesday, December 6th** - email to kw1u@arrl.net and ab1oc@arrl.org
  - 2 – 3 paragraph bio of what you do and your experience with Traffic Handling and EmComm
  - Your top 3 (#1, #2, #3) choices of implementation teams that you'd like to work on from chart 3
  - Your top 3 Use Cases from chart 5

- PLEASE HOLD Saturday, December 17th at 1 pm ET for a zoom meeting to launch your implementation team

- Marcia Forde, KW1U is providing periodic email updates for implementation team volunteers

QUESTIONS?

CONCERNS?