Georgia Amateur Radio Emergency Service®
Digital Emergency Network

Outline of key factors for consideration and preliminary goals for implementation.

Three factors are critical to the design of a basic statewide digital network.

1) Interoperability

This factor is the key to meeting the Interoperability standard that is becoming a buzzword at the federal and state level.

- There is an absolute requirement that communications networks be able to communicate across interagency and inter-jurisdictional boundaries. This was a key finding of the 9/11 commission and has become a primary consideration for Federal grant funding.

2) Robustness

This factor is the layering of modes and methods of moving traffic. It contains both software and hardware components.

- It is critical that traffic be able to move via whatever route is available.
- Ideally there will be multiple parallel routes that exist before the need becomes acute.
- There must be a well defined system of fallback and failure modes as well as clearly defined and functional options to address identified failure modes.
- Any methodology, mode or medium is acceptable so long as it meets two criteria:
  A. It can correctly move the traffic end to end in a timely manner without errors.
  B. It is legal
- The system must be able to handle messages in multiple digital formats.
- The served agency must not be required to adapt their message before it can be sent nor should hams be put in the position of transcribing the message before sending.
- This is a process that is highly prone to errors which would reflect poorly on the Amateur Radio Emergency Service.
- The statewide emergency digital network must not rely primarily on a system of non-hardened ad-hoc infrastructure.
- There can be absolutely no sacred cows.

3) Flexibility / Universality

This factor describes the ease of use and adaptability of the system to meet diverse needs for the served agency.

- The system must have readily available client programs that do not require that the served agency make major changes in the way it works to accommodate the system.
- The client programs must have a short learning curve for both the ham and the served agency staff.
- It must be as intuitive as possible.
- The system should be accessible without the requirement for expensive or esoteric software or hardware.
- Both the software and required hardware must be easily deployable in multiple configurations using a minimum of manpower.
- The hardware must be easily portable and able to run from a variety of power sources.

Assessment:

The **Winlink 2000** system offers the best combination of features and the existence of an existing worldwide network. It combines cutting edge Ham RF to internet email connectivity and at present provides the best solution to quickly creating a state wide digital network. These preliminary goals have been set for the deployment of Winlink within the Georgia Amateur Radio Emergency Service.

Nothing in this plan should be construed to limit local groups from digital modes within their group. However these groups should still employ and integrate **Winlink 2000** into their operational planning so that they may retain effective communication with the rest of the state. In most cases the hardware involved can be used with both **Winlink 2000** and a wide variety of other software programs.

Short-term Goals for deployment of the Winlink system By the Georgia Amateur Radio Emergency Service®

1. **All GAARES leaders** should have **Airmail** installed and configured for Telnet access on both home computers and personal laptops. This is absolutely free and requires no hardware except the computer. It can run on Win 98 on older computers. This should be done no later than the first week of September 2005.
2. All DEC's EC's and AEC's should become familiar with the setup and deployment of a basic Telpac gateway <> Airmail system and the use of Airmail to Airmail on VHF.
3. All county EC's with a good working relationship with their EMA / EOC should work to demonstrate and install either Airmail or Paclink at their EOC.

Intermediate Goals for deployment of the Winlink system By the Georgia Amateur Radio Emergency Service®

1. Assess the existing number of HF stations in Georgia with Pactor II and III capability.
2. Locate and assist groups who are interested to begin the deployment of local TelPac Gateways and assist via phone support those individuals who are interested in installing Airmail.
3. Identify and utilize AEC appointments on a regional basis to help local groups integrate Winlink into their planning while creating a cadre of trained Winlink 2K technical experts.

Long-term Goals for deployment of the Winlink system By the Georgia Amateur Radio Emergency Service®

1. Encourage the installation of multiple permanent TelPac gateways in every community with a population >50k. (The minimum is 2 located on geographically separated sites and different segments of the power grid and different ISP's to provide redundancy)
2. Begin the process of developing EMCOMM Hubbing PMBO's in the larger cities.
3. Explore the potential for harnessing Federal and State Grant funds to finance the purchase of deployable HF Pactor III systems and D-Star 1.2 Ghz links between large population centers.
4. Initiate HF Winlink demonstrations at large events.

This section is being recommended for inclusion in the Georgia Section Emergency response plan. It was provided to me by Benson Scott AE5V who is heavily involved in NTSD in the Louisiana section. I think it is good place to start. We need to define the preferred frequencies for station to station contact on 30, 40 and 80 meters.

8. Digital Messaging

8.1 The HF Digital National Traffic System is encouraged for NTS type messages without email addresses.

8.2 Winlink 2000 is encouraged for destinations with email addresses. This may include HF and VHF with Telpac, Paclink, and Airmail utilization.

8.3 Pactor is the preferred mode for point-to-point HF digital communications using Airmail. The simplex point-to-point frequencies will be 3xxx.x and 7xxx.x LSB Mark (3xxx.x and 7xxx.x center) for utilization inside the state. (**These need to be determined for Georgia**)

8.4 ARES districts with metropolitan areas should develop a minimum of two VHF or UHF TelPac Internet gateway stations to provide Packet to Internet capability.

8.5 APRS Link is a limited capacity option for those areas with active APRS IGATES and no Telpac Gateways.

8.6 Modes such as RTTY, PSK31 and others which do not have error correcting or error checking are **not** encouraged due to their ability to receive errors without realizing the transmitted message has changed.

8.7. Each ARES member should utilize Airmail with Winlink 2000 for ARES training and Emergency Communications on a regular basis. This includes receiving messages for third party delivery as well as sending messages.