TARPN
Modern Packet Radio

Don Rotolo N2IRZ
3AUG2026

GAPACKET
A TARPN NETWORK: TARPN.NET/GAPACKET
TARPN

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Welcome!

Photos by the author and Tadd Torborg KA2DEW

- **My Goals for Today**
  - Offer basic info about Packet and Networking
  - Avoid putting you to sleep
  - *Time is limited, so we'll just hit the highlights here*
- **About Me**
  - I am N2IRZ, first licensed around 40 years ago
  - Active in digital communications on all bands
  - Wrote the Digital column for *CQ Amateur Radio* magazine (in various forms) for over 25 years
  - Currently living in Roswell

TARPN – Modern Packet Radio

- What is **Packet Radio**?
- What can I **use** it for?
- What is a **TARPN**?
- What **equipment** does it use?
- Is it **expensive** to get on the air?
- How do I **find others** to communicate with?
- What **next**?

What is Packet Radio?

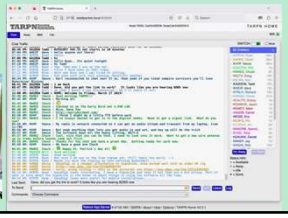
- It is a way to transfer data using (duh) Radio
- It is fast-ish and reliable, delivers the message perfectly *or dies trying*
- It is not new technology, but how WE use it is new
- Well-understood, with stable code, interfaces & performance

What it isn't:
- Megabit speeds
- Expensive
- Complicated
- Like anything else

What Can I Do on Packet?

- **Casual chat** and (BBS) email, a non-toxic 'social network'
  - *We're on the air often, chatting by keyboard*
- **Emergency Communications** (when needed)
  - *We know it works, it's ready when needed, it's fault-tolerant, and when it breaks, we can fix it.*

Is that all?
- No...



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Packet Radio Myths

- **Packet died in the 1990s due to the Internet**
  - It's not dead yet, but Internet is far faster
- **Packet doesn't work**
  - It does when it is done correctly
- **The only packet out there is APRS & Winlink**
  - Provably false. But we happily co-exist with them
- **Packet stations are expensive**
  - In our world, the coax is usually the biggest expense
- **There's nothing to do on packet**
  - Oh, yes there is! We'll get to that in a moment…
- **Packet is slow**
  - Compared to what? Internet? WiFi? Sure. Fast enough for our needs.

What *Else* is a Network good for?

- As a **Learning Tool:**
  - **All things radio**... Every aspect of Amateur Radio and Electronics is represented *somewhere* in TARPN.
- As a **playground** for experimentation
  - Data, Hardware, Software, Network Theory, RF, Apps...
- A reliable resource for **EmComm/ARES/etc.**

The Network: TARPN

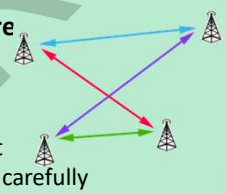
- **T**errestrial **A**mateur **R**adio **P**acket **N**etwork
- A complete packet **networking system**, using well-defined tech
  - Reliable communications over long distances, hop by hop
  - Automatic & manual routing
  - Cookbook recipe for building – or pre-built!
  - Common & inexpensive **hardware**
  - Free & open **software**, firmware and configuration, for *learning*
- A robust and supportive **community** of radio enthusiasts
- There are several TARPNs in use today
  - **GAPACKET is in Georgia**. *We're just getting started. Come join us!*
  - KENTUCKIANA, VA TARPN and NCPACKET in North Carolina

TARPN Practices

TARPN

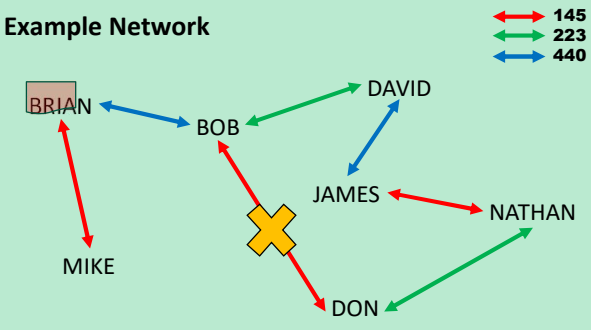
1.	**No non-Amateur methods for data, sourcing, delivering or relaying our traffic.** Licensed Ham control-operator copy-and-paste text is the only permitted linkage.
2.	**All links are dedicated point-to-point links.**
3.	**Everybody runs a Raspberry Pi G8BPQ node.**
4.	**Network configuration is open.** We will go to great strides to make it possible for every participant to inspect every node.
5.	**Don't mix Individually sponsored networks with Big-Money sponsored network**
6.	**These rules are enforced by separation from the network.**

The TARPN Physical RF Architecture



- There are no user ports.
  - Every participant runs a node
  - Nodes are always-on
- Every link is dedicated, point-to-point
- Links are designed and implemented carefully
- Every channel has full capacity at all times
  - The network is graceful and robust under heavy loads
    - No abrupt failure, just increasing latency
    - Ideal performance in emergencies

Example Network



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Networking On Purpose

- We collectively choose to build a network optimized for performance and reliability
- Our practices are well-considered, backed by provable facts
- Everyone is welcome. The only limits relate to RF paths
- We are a social community, and we are happy to help
- Excellent technical support – worldwide community

Equipment Considerations (1)

- **Radio**
  - **Any voice radio** will operate on packet
  - Some radios can operate at higher data rates
  - Typically, we use surplus commercial radios ($8 to $50)
- **User Interface Device**
  - Most any computer, tablet or phone
  - Need not be fast: primarily used as a display & keyboard
  - Computer is ideal due to larger screen size

Equipment Considerations (2)

- **Network Appliance: Raspberry Pi 4B, 1GB**
  - Raspberry Pi **4B**, 1 GB ($35) with 32 GB SD Card (~~$9~~)
    - *Readily available at MicroCenter. Pi 5 not yet supported.*
  - Supports up to 12 RF links (1 per TNC), but typical is 1-3 RF links
  - Runs the (free) Raspberry Pi Linux operating system
- **Software**
  - G8BPQ Networking Software via TARPN Install script
  - Actively maintained code base
  - Sample code & support resources for experimentation

Equipment Considerations (3)

- **USB to Audio MODEM (e.g., *NinoTNC*)**
  - Converts USB data to radio-compatible audio
  - One TNC for each radio
  - **Any KISS TNC can be used**, but…

The **NinoTNC** is just better

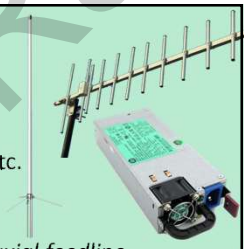
- Measurably better performance, adds error correction (IL2P)
- Multi-speed, multi-protocol, USB interface, KISS support
- Robust online support community, actively maintained firmware
- Easy, inexpensive (~$50) **thru-hole** kit, sold at cost

Equipment Considerations (4)

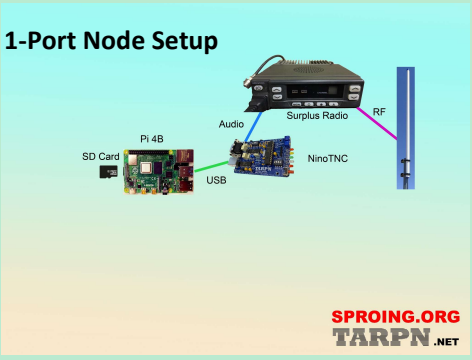
Other bits and bobs:

- Power supply for the radio & Pi
- Antennas, feedline, mounting, etc.
- Some simple wiring
- Optional box to keep it compact

Often, the greatest expense is the coaxial feedline



Basic 1-Port Node Setup



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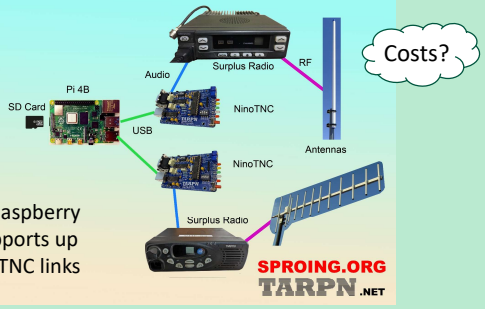
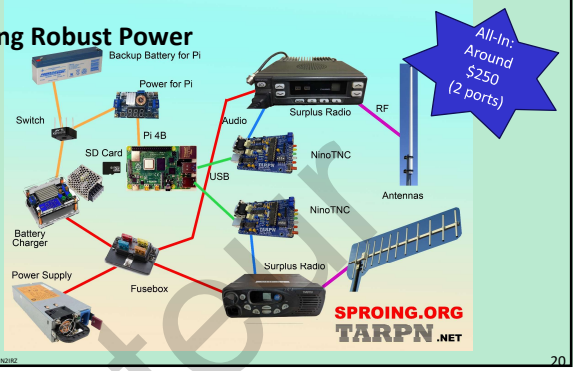
A Second Port



Adding Robust Power



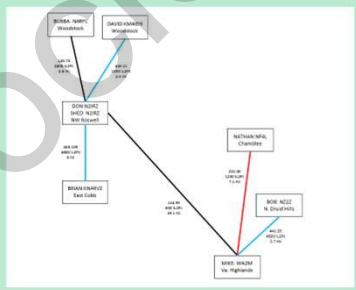
Getting Started:

The local TARPN Packet community can help when starting: We have many excellent and inexpensive solutions already identified.

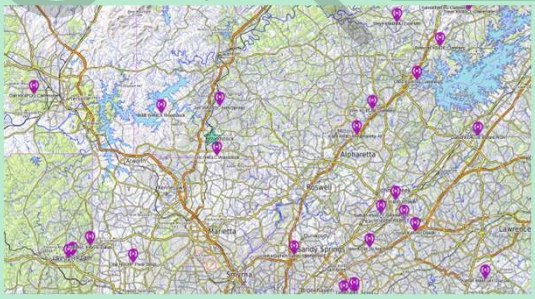
- Join our Discord Server
- Find someone in Simplex range (we'll help!)
- Build (or buy) a basic node:
  - Let us help build and configure it – or buy one pre-built
  - We have lots of equipment for loan/trade/purchase
  - Online instructions designed for beginners
  - We are here to help you with every step

The Atlanta TARPN

Active Network as of August 3, 2026



Active Network Prospects



An Invitation

- **What Does It Take?**
  - A desire to participate in the network
  - A desire to learn from and instruct other Amateurs
  - Ability to install and maintain some equipment

Come see me after the presentation

GAPACKET
Social Packet Radio in Georgia

TARPN
Terrestrial Amateur Radio Packet Network

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