



Rocky Mountain Ham Radio – New Mexico Overview

September 21, 2024

Brian Mileschosky N5ZGT – President, RMHAM-NM
Ed James KA8JMW – Technical Director, RMHAM-NM

Who We Are



- Rocky Mountain Ham Radio (RMHAM) was established in Colorado (1993) and expanded expanded into New Mexico (2014)
- We are a 501(c)(3) tax exempt public charity, an ARRL-affiliated club, have ~115 members, and value partnerships with other amateur radio clubs
- Our membership is composed of people across New Mexico, Colorado, and other states who bring a broad range skills, expertise and backgrounds:
 - Business
 - Scientific
 - Engineering
 - Technical program management
 - Information technology
 - Education
 - Trades

Who We Are



- Brian Mileschosky N5ZGT (Albuquerque) – President
- Jon Fox W0AMT (Albuquerque) – Vice President
- Tim Henson W5TNM (Tierra Amarilla) – Treasurer
- Ron Nelson NR5ON (Santa Fe) – Secretary
- Ed James KA8JMW (Edgewood) – Technical Director

Who We Are



- RMHAM has two primary focus areas:
 - **Develop capabilities** that enable and benefit the broader amateur radio community
 - Facilitate **technical education** across the broader amateur radio community

Our Focus on Capability Development



- RMHAM provides microwave IP and/or network connectivity to partnering clubs and repeater organizations across New Mexico and Colorado for the purpose of enabling or expanding their capabilities
- We own and operate DMR, D-STAR, and AllStar repeaters and APRS i-Gates for use by any amateur radio operator
- We provide communication support at public service events (operational assistance or use of equipment/assets)

Our Focus on Technical Education



- RMHAM organizes two annual conference-style events intended to teach amateur radio operators about a variety of technical topics:
 - The New Mexico TechFest (each February in New Mexico)
 - NerdFest (each January in Colorado)
- We provide multiple short courses on technical topics for the amateur radio community in the winter and spring months (RMHAM University)
- We offer and conduct forum presentations on technical topics at Hamfests
- All events are open to any existing or aspiring amateur radio operator

RMHAM in Action



RMHAM-sponsored network IP and routing class



Microwave link installation with Taos ARC partners

RMHAM in Action



Annual RMHAM-sponsored New Mexico TechFest

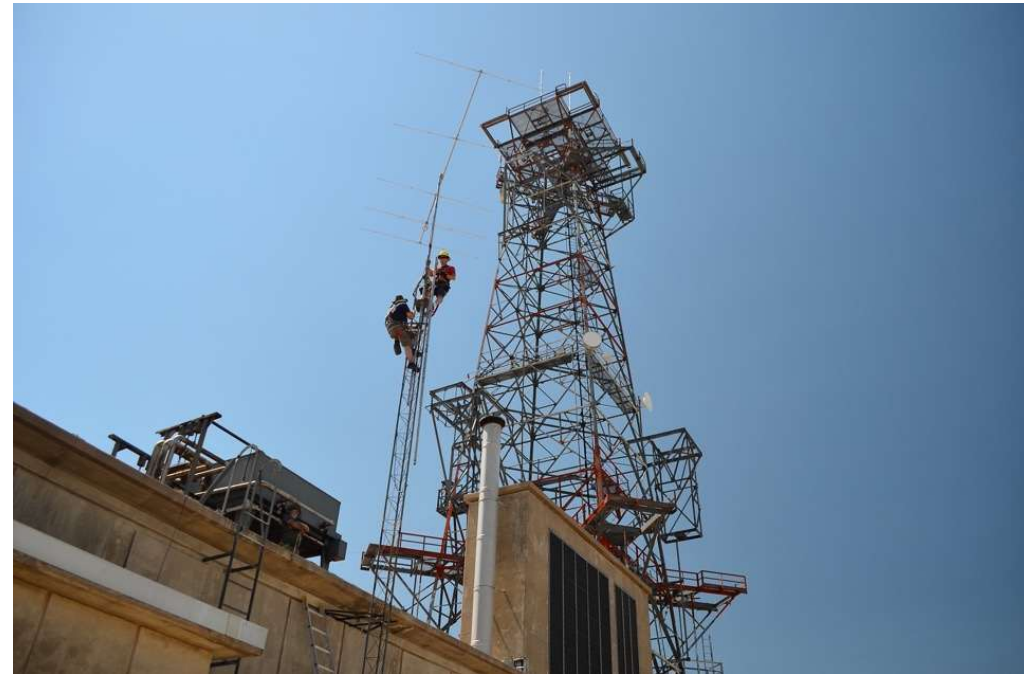


ARRL Field Day near Datil, NM

RMHAM in Action



RMHAM donation of repeater to student members of TARA

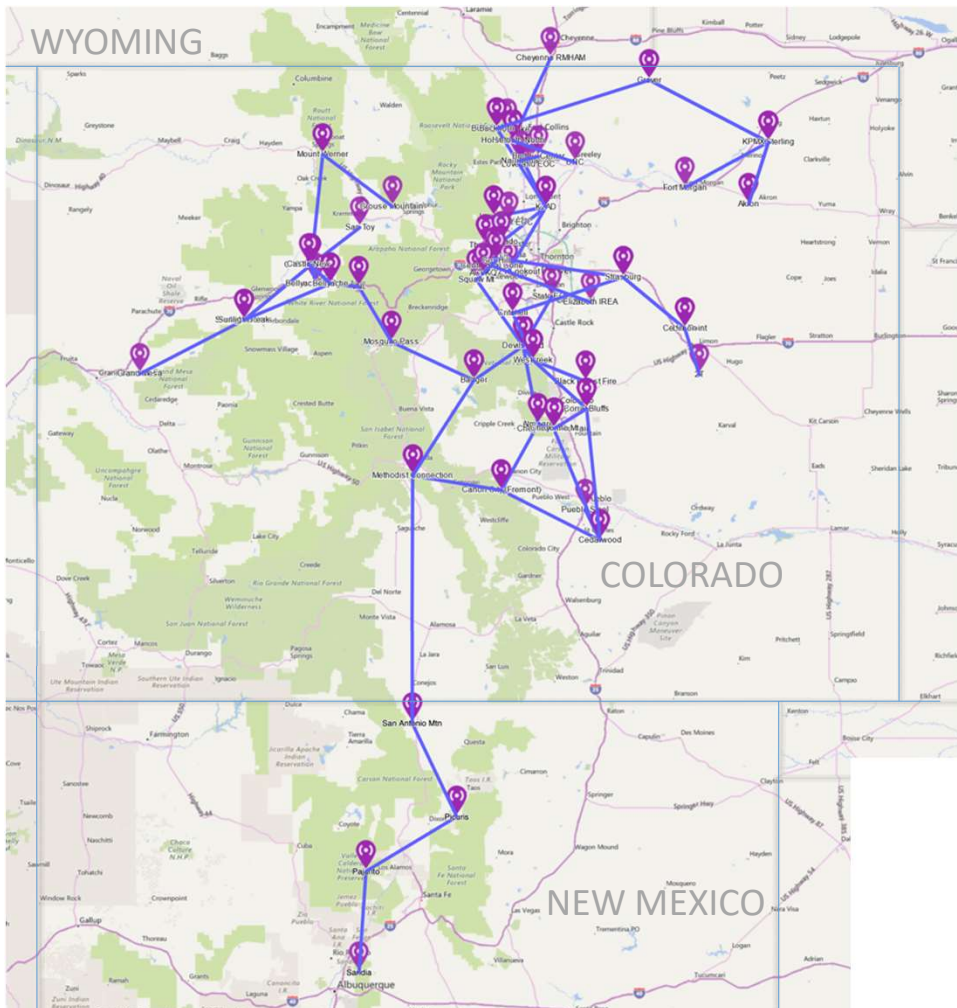


June VHF Contest in southern Colorado



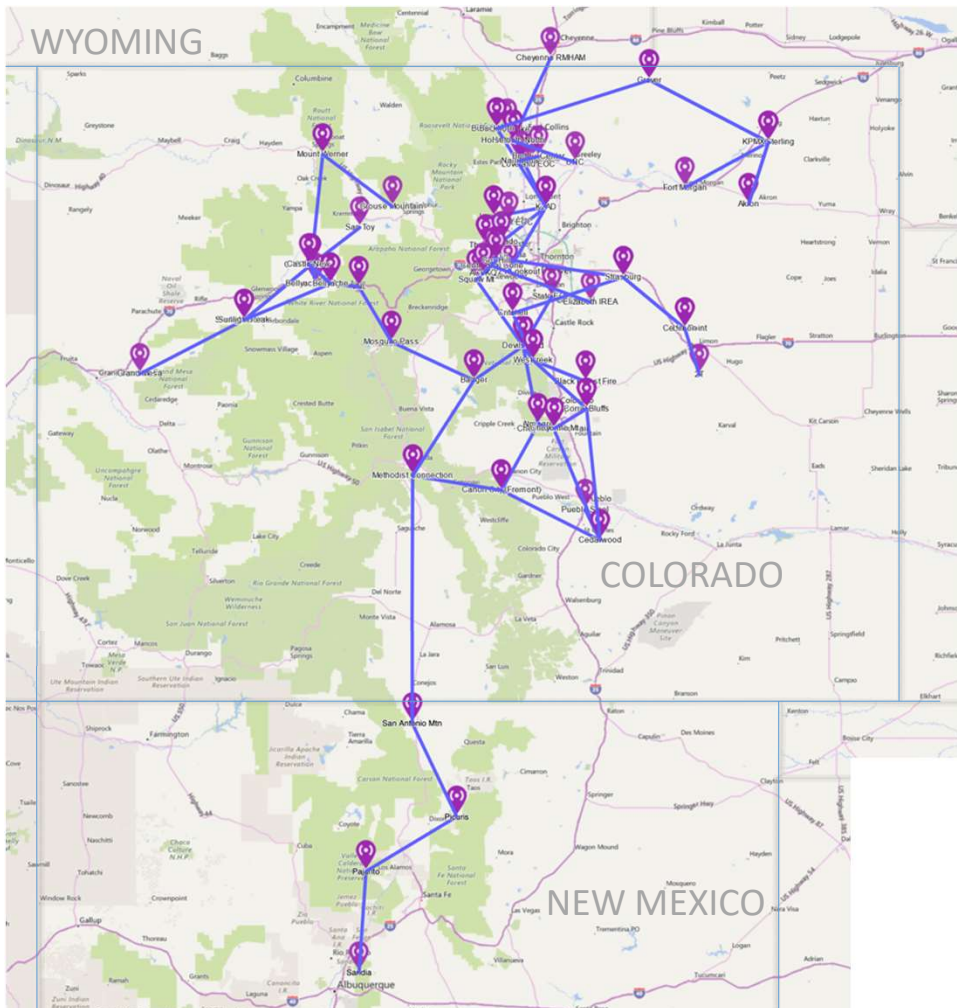
RMHAM Microwave Network Overview

RMHAM Microwave Network



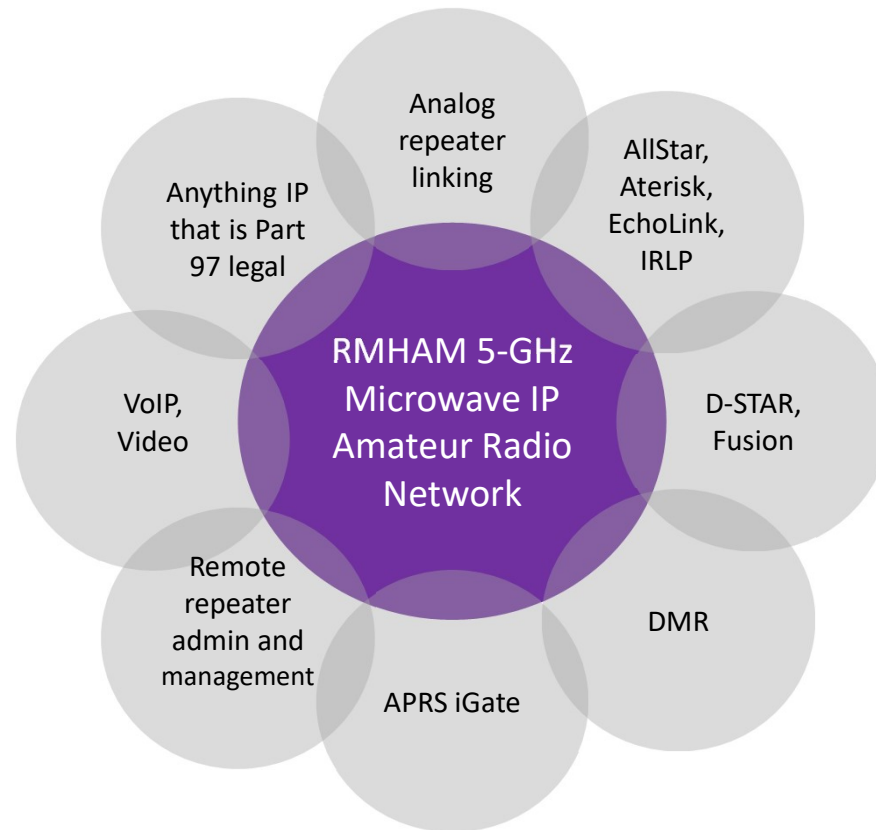
- RMHAM has built and operates a fully-managed IP-based microwave backbone network spanning Cheyenne, Wyoming down to Albuquerque, New Mexico and across Colorado's western slope
- It was purposefully created to be an infrastructure that enables partnering clubs and repeater organizations to expand their capabilities (repeater linking, repeater troubleshooting and administration, any IP-based application that is Part 97 compliant, etc.)
- It is built from reliable COTS 5-GHz networking and microwave equipment configured to operate on Part 97 amateur radio spectrum
- It does not rely on the internet...however it does have several internet taps for automatic fail-over if an RF link goes down

RMHAM Microwave Network



- It is secure, firewalled, and accessible only by physical (wire/fiber) or microwave connection through RADIUS authorization and authentication
- It is managed and monitored 24x7x365 by a dedicated network operations team and a suite of tools/protocols
 - DevDB, Observium, RADIUS, Smokeping, OSPF, and automated email/Telegram alerts
- Throughput averages 100-Mbit/sec across the network
- RMHAM's network consists of (as of September 10):
 - 108 point-to-point and point-to-multipoint microwave links across New Mexico and Colorado
 - 822 devices (routers, repeaters, RTCMs, power controllers, PTZ cameras, VoIP phones, etc.)

RMHAM Microwave Network – Application Space



RMHAM is Expanding its Microwave Network



- RMHAM was awarded a \$375k financial grant from Amateur Radio Digital Communications (ARDC) to expand its microwave network across New Mexico and Colorado
- In New Mexico we plan to expand the network
 - ...from Sandia Crest south to El Paso along the I-25 corridor
(Valencia County, Capilla Peak, M-Mountain, Caballo, Magdalena Peak, Twin Peaks, Mount Franklin-El Paso)
 - ...from Sandia Crest north to Durango along Highway 550
(Pajarito Peak, Lybrook Hill, Huerfano Mountain, Harris Mesa, Durango)
 - ...from Sandia Crest west to Mount Taylor



Does Your Club Operate Where we are Expanding?

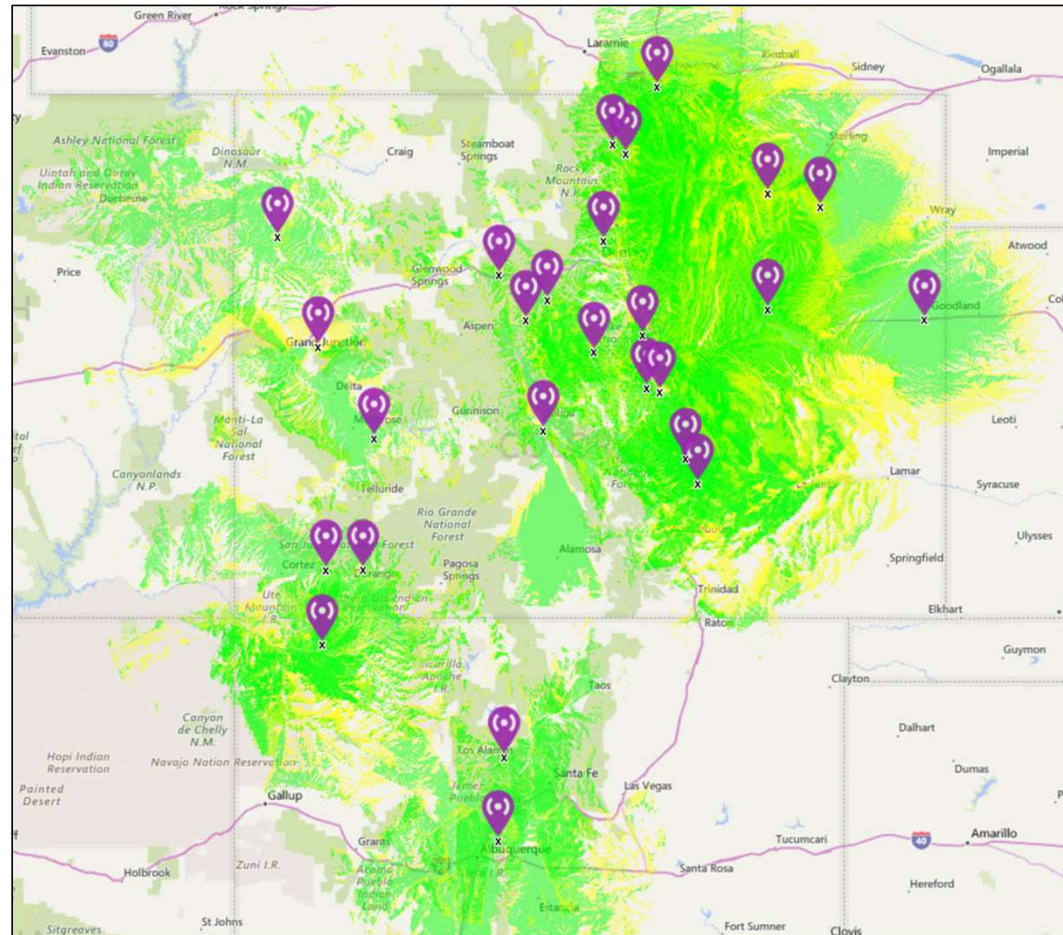


- We would like to visit with you about your club's/repeater organization's current capabilities and how microwave/IP connectivity could help it to grow/expand for the benefit of your members and users

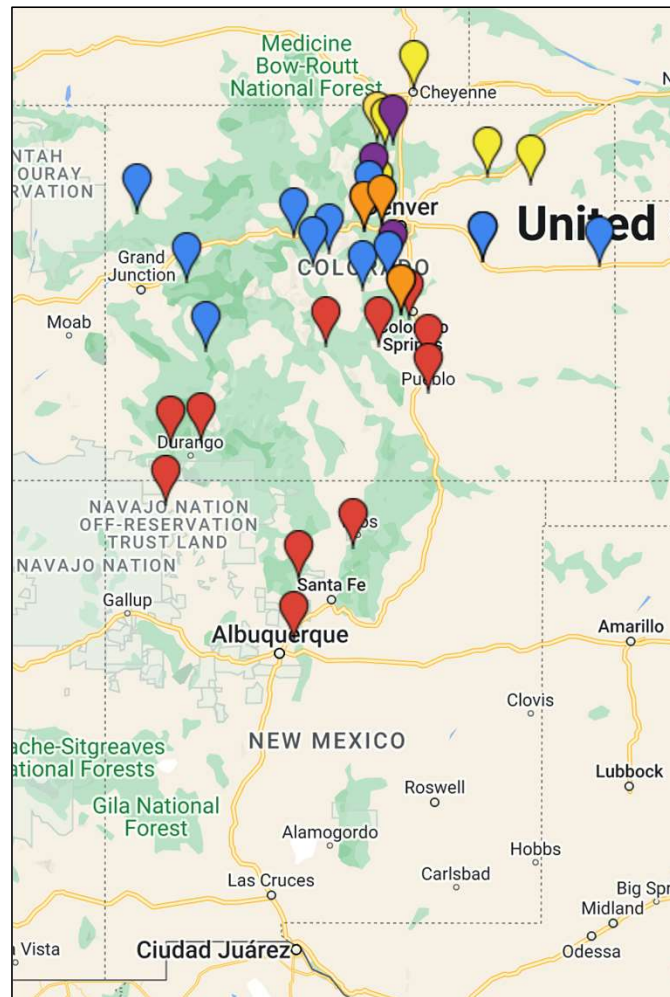


RMHAM DMR Repeater Network

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RMHAM DMR Repeater Network





RMHAM Communication Van Project

RMHAM Communication Van Project





RMHAM Trailer Mast Capability Expansion Project

RMHAM Trailer Mast Capability Expansion Project



Want to Get Involved?



- Contact us at **www.RMHAM.org** or visit with an officer to learn when our next activity will be
- Interested in joining us?
 - Participate in 3 valid activities, ask questions, determine if RMHAM is a fit for you
 - Must be nominated by a member, voted on by the board
 - Must participate at a reasonable level to remain a member

For More Information



- Contacts:
 - **Brian Milesosky N5ZGT** – President, RMHAM-NM (bpmiles@gmail.com)
 - **Ed James KA8JMW** – Technical Director, RMHAM-NM (ka8jmw@gmail.com)
- Website: www.RMHAM.org

