CHEROKEE COUNTY ARES · TRAINING BRIEF

SET 2026 After-Action & MeshCore Implementation

ARES / Club Meeting · Saturday, November 14, 2026 · 10:00 AM

Rob Bruderer, W1JKU — Emergency Coordinator

Off-grid text when the grid, the cell towers and the trunked system are down.

Agenda

1

Cherokee ARES SET 2026 — AAR

~4 min

Participation, tasks performed, lessons learned

2

Cherokee MeshCore Implementation

~12 min

Why mesh · how it works · why MeshCore · companions vs. repeaters · configuration · adverts & map · callsigns & Appendix C · channels

3

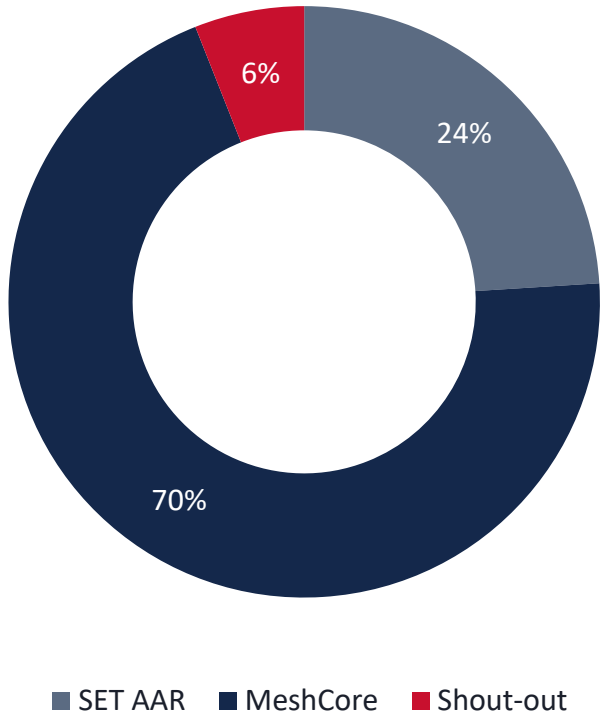
Shout-out

~1 min

A special thank-you

After the meeting: hands-on configuration and troubleshooting with W1JKU and KD4KHO

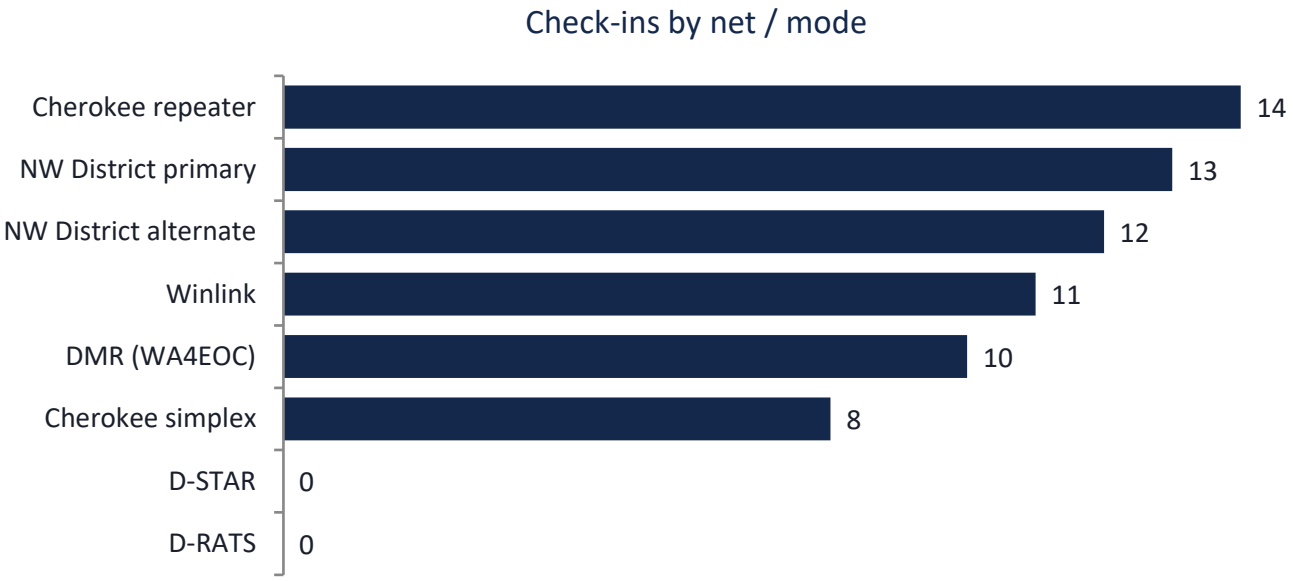
Where the time goes



SET 2026 at a glance

Saturday, Oct 3, 2026 · nested in the NWGA NW District SET. Scenario: county-wide loss of cell service and the Cherokee County trunked public safety radio system while Cherokee SAR searched for a missing rucker.

19	95	68	31	11	189
participants	volunteer hours	net & mode check-ins	scenario reports	on emergency power	ARRL Form A points



Who did what

- **Field team:** W1JKU & KO4PWB at Red Top Mountain, 05:00–12:00
- **Net Control:** KD4KHO & KO4UQF from two locations
- **Tracking:** 3 APRS / Meshtastic scenarios
- **ENDEX 09:52** — early; on-site activities cancelled

Tasks performed

13	Done
1	Partial
3	Not performed
1	Cancelled
1	Added

Performed

- Activation and radio checks from 06:45
- Cherokee repeater 145.190 (14) and simplex 146.425 (8)
- Winlink: 11 check-ins; 6 VHF gateways, 3 digipeater paths, 4 HF bands tested
- DMR net on WA4EOC (10)
- NW District primary, alternate and 220 nets
- GA State ARES Winlink net
- APRS hunts for W1JKU: 12 + 12 reports
- Meshtastic node hunt: 7 reports
- SAR “subject located” relayed on the repeater at 09:51

Gaps & changes

- **D-STAR:** REF003A busy, not used
- **D-RATS:** not exercised
- **HF 3.975:** no Cherokee check-ins
- **ICS forms:** partial; KD4KHO ICS 214 is the log of record
- **Show & tell:** cancelled
- **Added:** PoC radios as a command back-channel

Lessons learned

✓ Sustain

- Nesting the district plan inside the Cherokee nets
- Two Net Control stations in different locations — full simplex coverage
- The APRS tracking scenarios
- Emergency power: 11 stations
- Depth of Winlink path testing

↑ Improve

- **Mesh reach — use more MeshCore** (the rest of today)
- Name an alternate D-STAR reflector
- Exercise D-RATS
- Carry PoC traffic on RF; fallback for HF 40 m
- Each team and member keeps their own ICS-214 and submits it at the end of the exercise or event

02

Cherokee MeshCore Implementation

Why mesh · how it works · what to configure · how you get on the map

Why mesh?

When cell service and the trunked system go down — exactly our SET scenario — a short text over LoRa may still get through, if you have proper coverage.

Close by, no repeater needed: companions on the same channel talk directly. For distance, repeaters placed high fill the gaps.

Part 13 · MeshCore Operations, § 13.1–13.2

1

When the grid fails

No cell towers, no internet. Radios talk to radios: directly when close, through repeaters for distance.

2

Low power, long range

LoRa trades speed for range: a few hundred milliwatts can cover miles; days on a battery or solar.

3

Anyone can carry one

902–928 MHz ISM band, FCC Part 15 — no license. Licensed operators put their callsign in the node name.

4

Adds a layer

Text, position and small data. Supplements voice nets and ARES message handling; it does not replace them.

How MeshCore moves a message

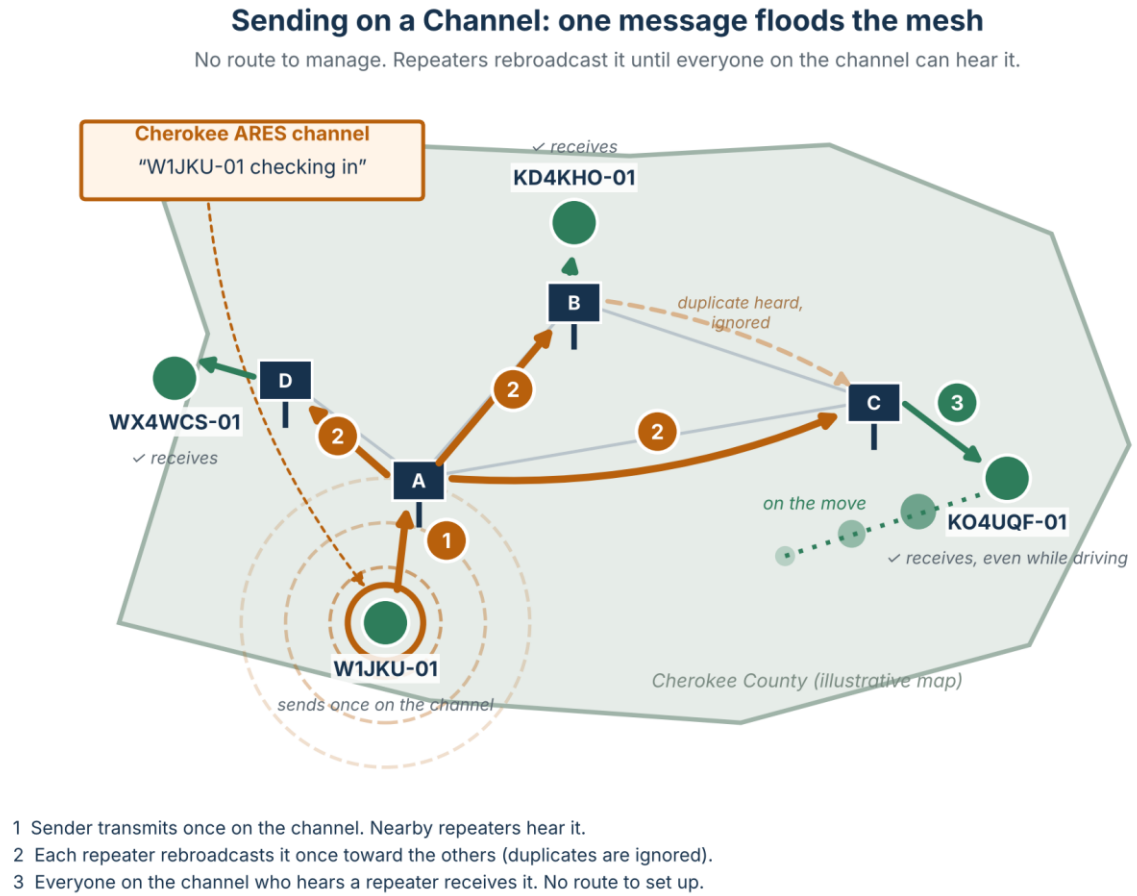


Figure 13-1 (Part 13): one channel post reaches everyone, including a station on the move.

1

Close by: companion to companion

Same channel, in range: almost instant, no repeater. LoRa range is significant; terrain decides.

2

Farther: repeaters carry it

Repeaters placed high relay the traffic. Companions send and receive; they don't relay.

3

Channels flood

Send once; every repeater rebroadcasts once; duplicates are ignored. No route to manage.

4

DMs follow a stored path

Encrypted, with delivery status — but the path goes stale when someone moves.

Why MeshCore over Meshtastic

	Meshtastic	MeshCore
Who relays	Almost every node	Only repeaters — companions stay quiet
Background chatter	Periodic node info & telemetry	Minimal; adverts are manual
Hop limit	Default 3, max 7	Up to 32 (our 2-byte setting)
US radio settings	LongFast 250 kHz, SF11	910.525 MHz, 62.5 kHz, SF7, CR5
Coverage	Whatever nodes are nearby	Known, tracked repeaters
Offline catch-up	None built in	Room servers store & forward

They cannot talk to each other. Same hardware, different firmware. A Meshtastic radio will not hear ARES traffic — re-flash it with MeshCore (flasher.meshcore.io).

What we saw at SET

7 Meshtastic reports

12 APRS reports

Honest trade-off

Nearby companions talk directly, but county-wide reach needs repeaters. Coverage is built, not automatic — which is where you come in.

Companions vs. repeaters

Companion

Your personal device — every member

- Pairs to your phone (Bluetooth) or computer (USB)
- Sends and receives — does NOT relay anyone else
- Firmware: Companion (BLE)
- Adverts only when you tell it to
- **“Enable Repeat Mode” stays OFF**

≠

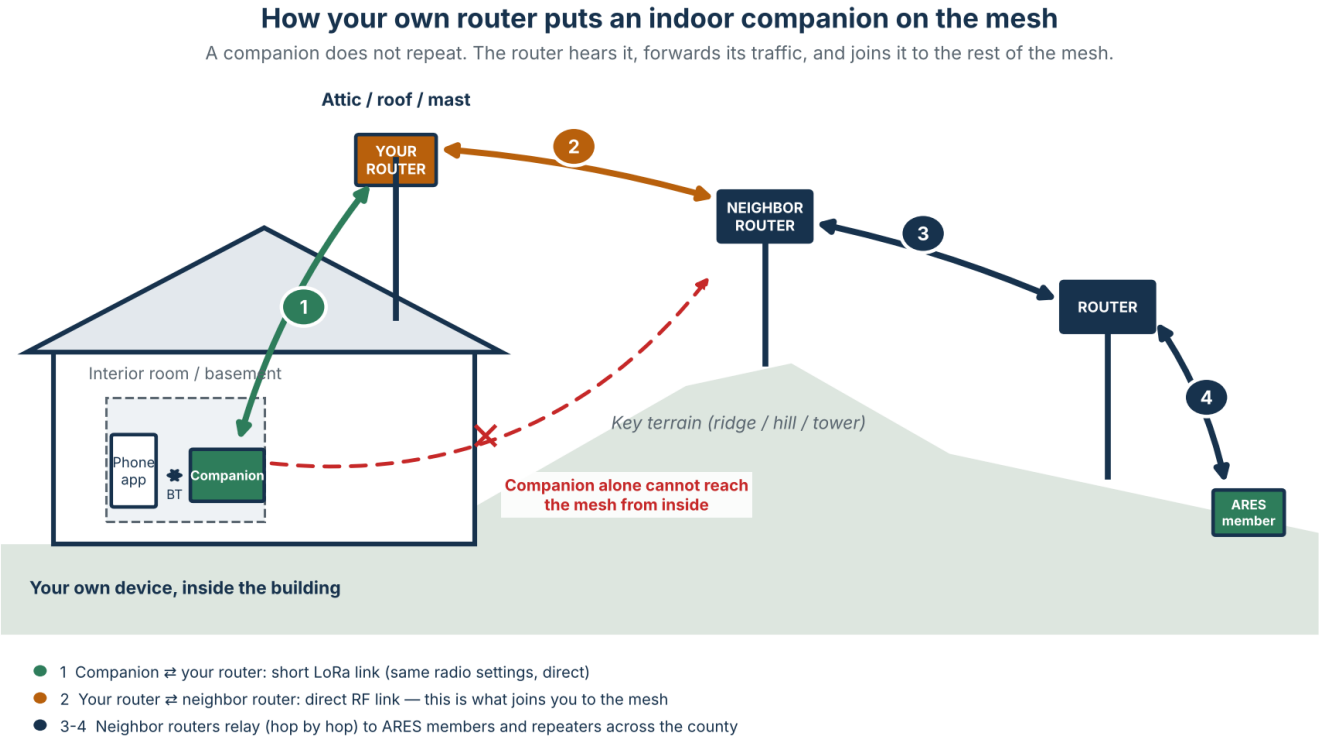
Repeater

Fixed infrastructure — placed high

- No phone; runs on its own, 24/7
- Forwards traffic toward its destination
- Firmware: Repeater, version 1.14 or newer
- Adverts itself automatically
- Managed remotely from your companion app

Two jobs, two devices. Adding companions never extends coverage — only repeaters do. Room servers (store & forward) are future ARES use.

Why host a repeater at your home?



Must hear another repeater. A repeater that hears no other repeater is an island. Test the site first, then check the Neighbors list (want 2+).

1

Fixes the indoor problem

Walls, roofs, low-e glass and basements often leave a companion hearing nothing.

2

Helps everyone nearby

One well-placed repeater serves every ARES member and mesh user in its area.

3

Keeps working when the grid fails

On battery or solar it keeps relaying — and you manage it without a ladder.

4

Gets you listed

Register it with ARES leadership; it appears under Repeaters in Appendix C.

Companion configuration — the ARES standard

MUST MATCH ON EVERY NODE	910.525 MHz	BW 62.5 kHz	SF 7	CR 5	2-byte path hash

Name	Callsign-xx First name (e.g. W1JKU-01 Rob)
Preset / Region	Canada, USA (Recommended)
Transmit power	22–30 dBm — never above your device's rating
Default path hash size	2-byte
Default region scope	Leave empty
Latitude / Longitude	Fixed coordinates if it stays put · Share Position: ON
Auto Retry / Auto Reset Path	Enabled / Do NOT enable
Enable Repeat Mode	**OFF**

Do this

- Flash Companion (BLE) firmware at flasher.meshcore.io (Chrome)
- Pair the MeshCore app — PIN 123456
- Apply every setting here (Part 13 § 13.6)
- **Reboot** after changes, then send a Flood Advert
- **Export Config** when it works — re-import after a re-flash
- **Battery tip:** fixed coordinates instead of GPS took KD4KHO from 1 day to 5+ days. Turn GPS on when mobile.

Repeater configuration

MUST MATCH ON EVERY NODE	910.525 MHz	BW 62.5 kHz	SF 7	CR 5	2-byte path hash

Repeater CLI (config.meshcore.io or the app's repeater screens)

```
set name Holly Springs                  # landmark people know
set radio 910.525,62.5,7,5              # USA/Canada preset
set path.hash.mode 1                    # = 2-byte path hash
set lat 34.xxxx / set lon -84.xxxx      # puts it on the map
set advert.interval 60                  # zero-hop, minutes
set flood.advert.interval 3             # flood, hours
set owner.info you@email
password <your-own>                     # never leave "password"
advert                                  # announce it now
```

Checklist

- Repeater firmware 1.14+ (older ones drop 2-byte packets)
- Antenna on before power-up
- Callsign in the name for Appendix C, e.g. KO4UQF-Holly Springs
- Add your companion's key to access control
- Neighbors list: hears at least one other repeater
- Tell ARES leadership where it is

ADVERT — get yourself on the map

1

Set your position

Fixed lat / long (saves battery) and Share Position in Advert ON

2

Reboot

After any settings change, restart the companion so the changes take effect

3

Send a Flood Advert

Manually, after the reboot. Zero-hop reaches only nodes that hear you directly; flood spreads across the mesh

4

Add me to the Map

MAP → Internet Map → ⋯ → Add me to the Map

Why it matters

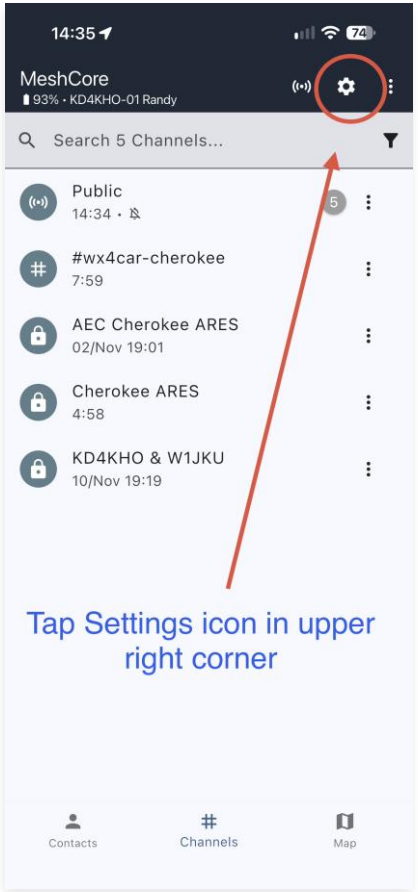
- Net Control can see where you are
- The map is how your node gets into Appendix C
- Companions never advert on their own: advert after you move
- Repeaters advert themselves (ARES: flood every 3 hours)

Not on the map?

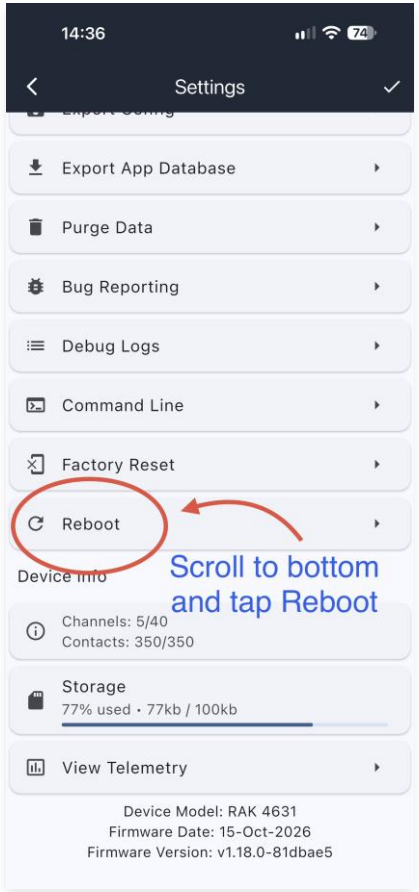
- Check the radio settings match (previous slides)
- Can you reach a repeater? Test on #test or #bot (next slide)
- Reboot, send the advert again; look on map.meshcore.io

How to reboot your companion in the app

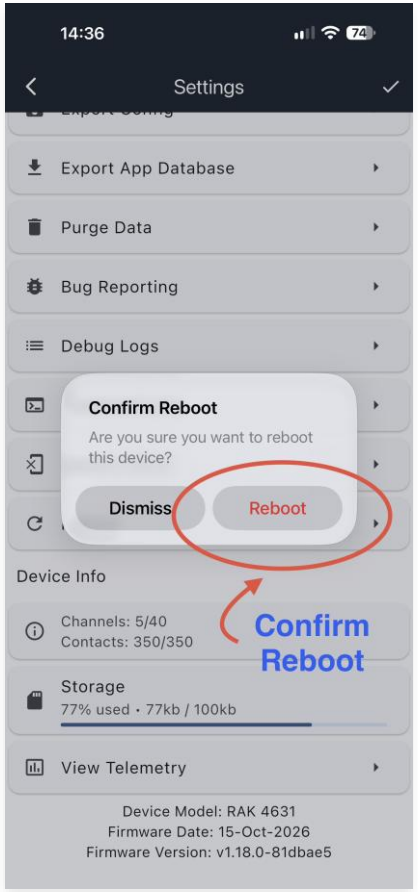
1 Tap Settings



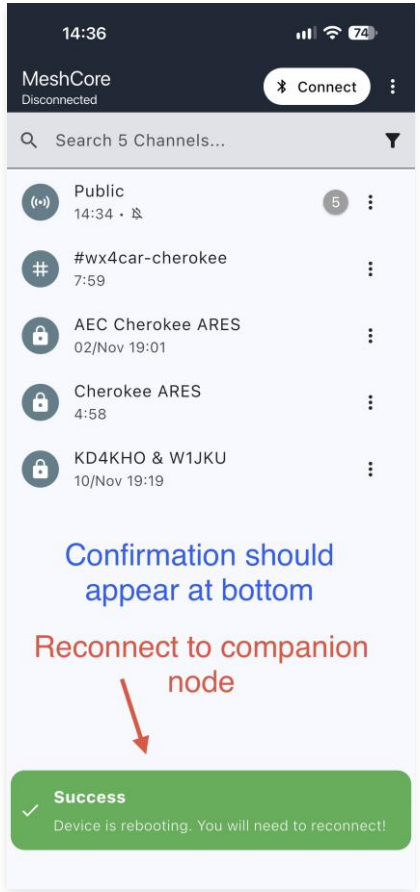
2 Scroll down, tap Reboot



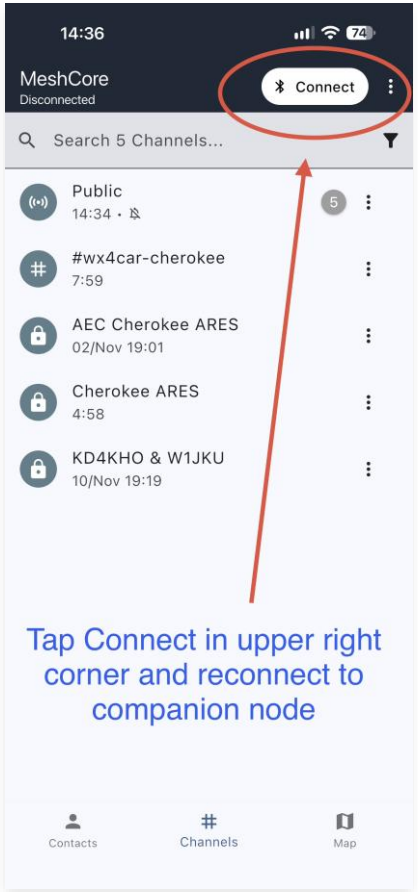
3 Confirm Reboot



4 Rebooting



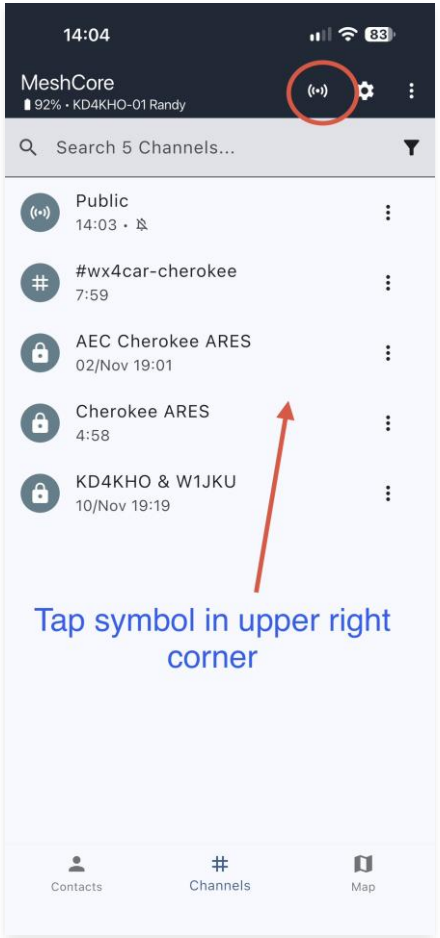
5 Tap Connect



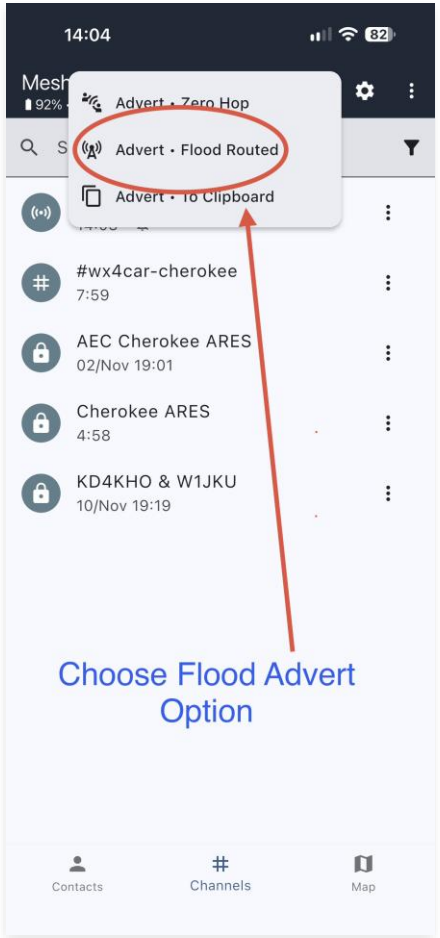
Screenshots: KD4KHO

How to advert in the app

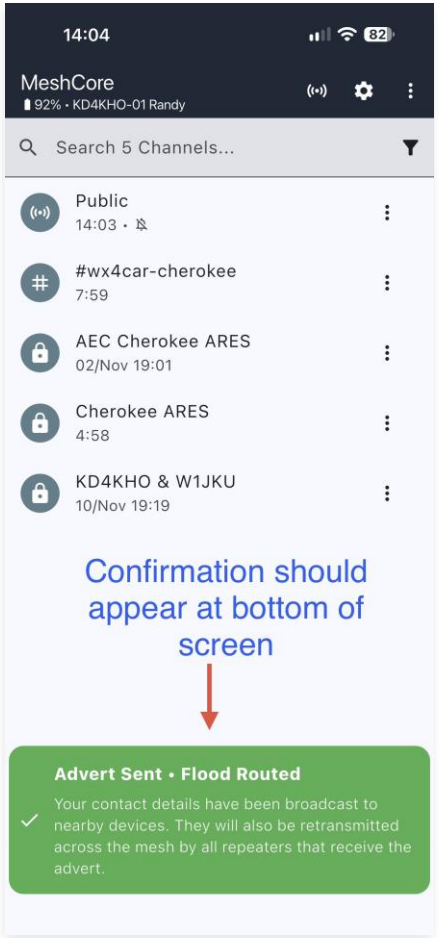
1 Tap the advert icon



2 Choose Flood Routed



3 Confirmation appears



Remember

- **Reboot first** if you changed any settings
- **Flood Routed,** not Zero Hop: flood crosses the mesh
- **Then** MAP → Internet Map → ⋯ → Add me to the Map
- **Advert again** whenever you move

Screenshots: KD4KHO

Am I reaching a repeater? Use #test or #bot

1

Add the channel

Add Channel → hashtag channel → #test (or #bot). Temporary — just for testing.

2

Type “test”

Post the word test on that channel.

3

Read the bot’s reply

Bots auto-respond with the message path and the repeaters that heard your node.

4

Delete it afterwards

Very high traffic. Remove the channel when done; add it again any time.

Example

```
You:  test
Bot:  path + repeaters that heard you
```

No reply? Your companion is not reaching a repeater: move higher or closer to a window, or check the radio settings.

Use it to

- Check a new companion or location
- See which repeaters hear you
- Site a new home repeater

Your callsign in the node name builds Appendix C

Your node
KD4KHO-01 Randy

Flood advert
position + public key

map.meshcore.io
the public MeshCore map

Roster refresh
every ARES & CARS callsign

Appendix C
QR · public key · last heard

Naming rules

- **Companion:** Callsign-xx First name, up to 25 characters — **W1JKU-01 Rob**
- **Second device:** next number — **W1JKU-02 Rob**
- **Repeater:** Callsign-Landmark — **KO4UQF-Holly Springs**
- **Keep the callsign separate:** “W1JKUROB” or “Rob’s node” won’t be found
- **No callsign or no advert = not in Appendix C**

7 of 38

ARES callsigns found on the MeshCore map at the last roster refresh (Nov 9, 2026). Let’s fill the rest.

Add the channels — scan now

MeshCore app: Menu → Add Channel → Scan QR Code

Public

Built in — keep it, but adjust

- **Notifications:** None
- **Retention:** 3 days
- Well-known key: anyone can read it

Otherwise your phone goes off day and night.

#wx4car-cherokee

Public · WX4CAR-Cherokee County ARES

Ham radio talk, Cherokee & area. Hashtag channel: key comes from the name. No region scope.

Cherokee ARES

Private channel — members only

The QR code and key are shown at the meeting and shared with ARES members through Groups.io (Part 13 Appendix B). They are never posted publicly.

Notifications: All · Retention: 7 days

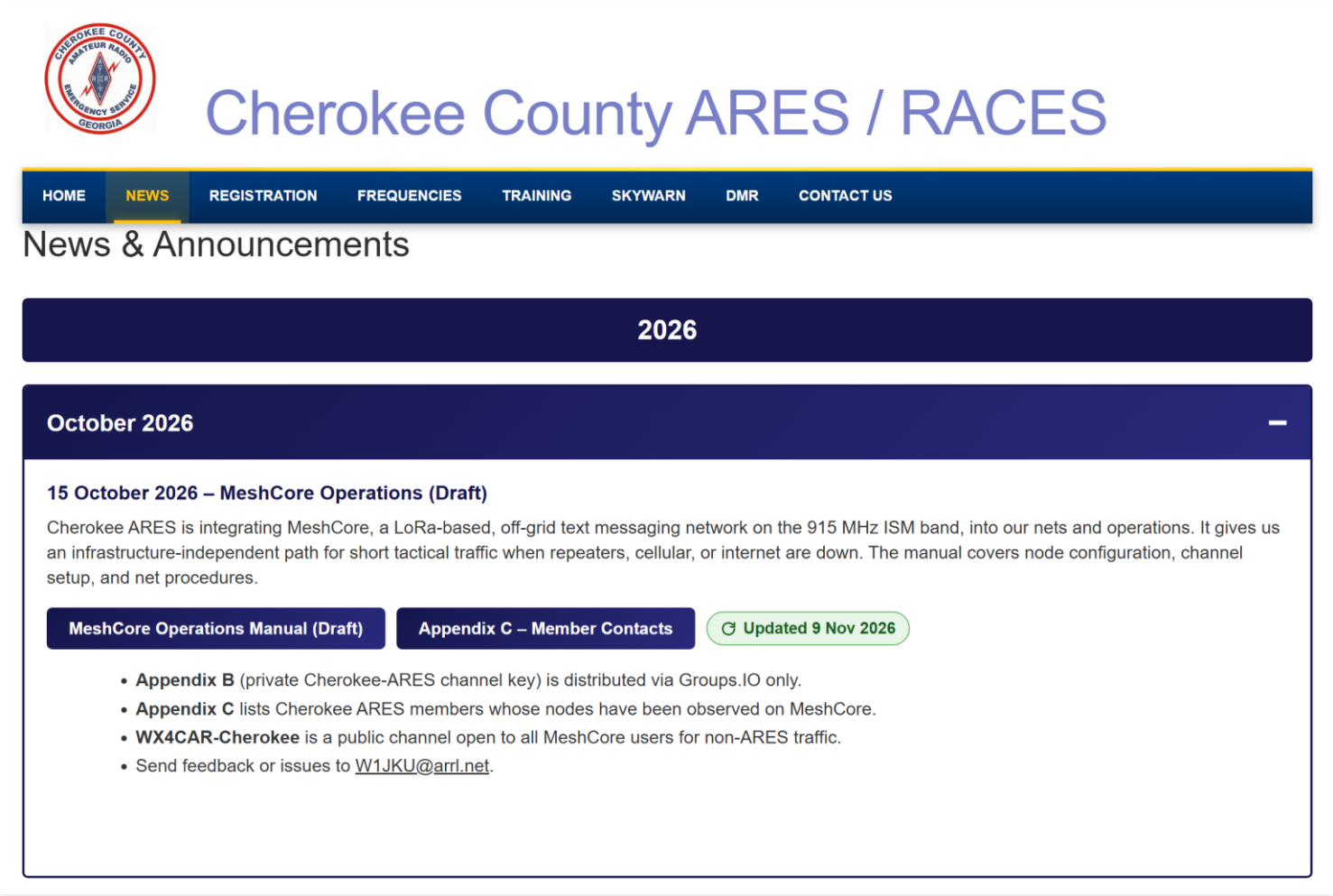
Your MeshCore checklist

- [ ] Flash MeshCore Companion firmware
- [ ] Name it Callsign-xx First name
- [ ] Apply the ARES settings — they must match
- [ ] Reboot, Flood Advert, Add me to the Map
- [ ] Scan #wx4car-cherokee and Cherokee ARES
- [ ] Export your config
- [ ] Consider hosting a repeater at home

Operating rules & tips

- **Channels first.** Direct messages only in controlled proximity (Field Day, GA Death Race, GA Jewel)
- **Monday net:** post on Cherokee ARES — “W1JKU checking in, Woodstock”
- **No reply ≠ not received** — channels have no delivery report
- **Re-flashed?** Forget the Bluetooth pairing first; PIN 123456
- **Favorite** key ARES contacts and repeaters so they’re never dropped
- **Stationary?** Fixed coordinates, GPS off — much longer battery life

Find it on Cherokee-ARES.ORG



News page, October 2026 entry — click the picture to open it

Links

News page

cherokee-ares.org/news.html

MeshCore Operations Manual (Draft)

Part 13, PDF

Appendix C — Member Contacts

Refreshed from the MeshCore map

MeshCore map

map.meshcore.io

MeshCore flasher

flasher.meshcore.io

Appendix B (private channel key) is on Groups.io only — never on the website.

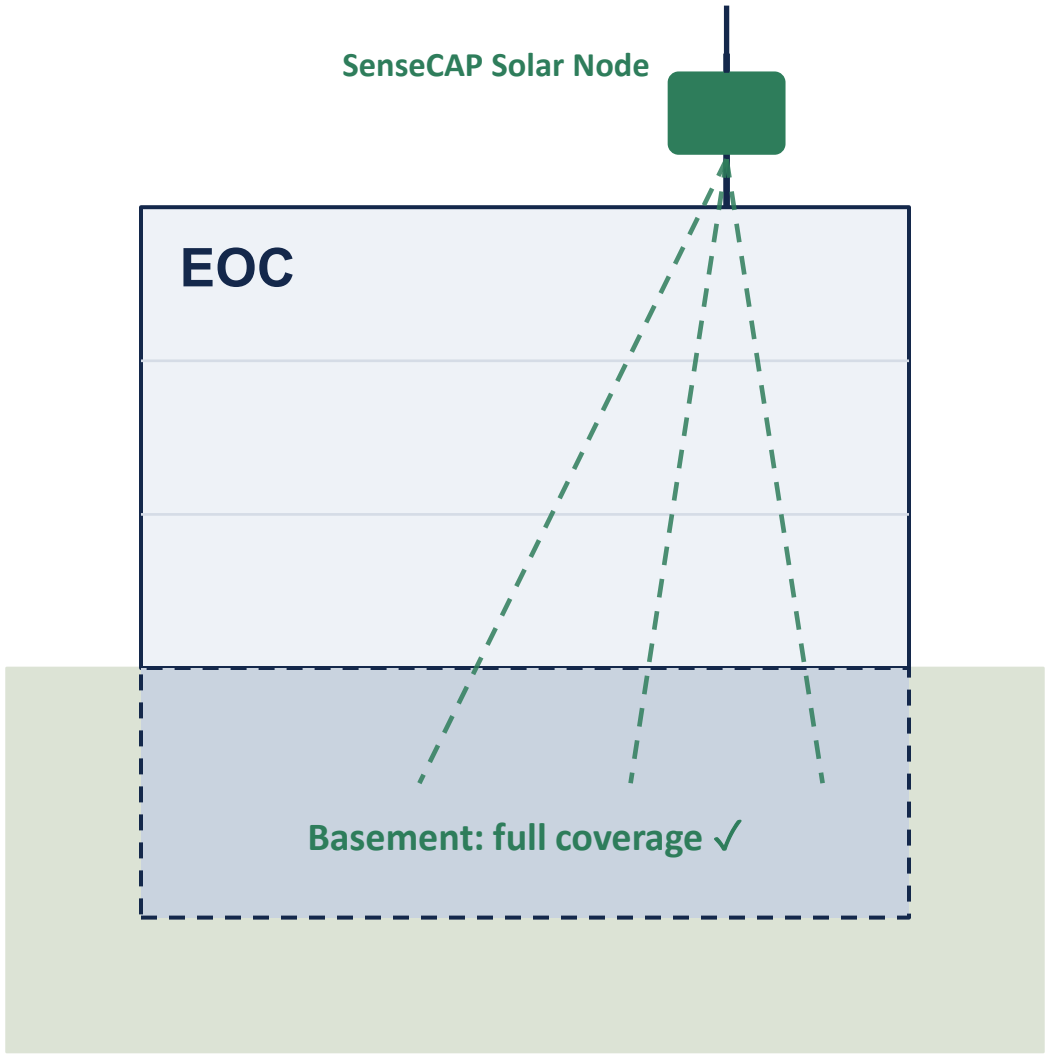
Shout-out

Thank you,

Shawn, K4ZRI

for donating a Seeed Studio SenseCAP Solar Node to Cherokee ARES.

- **Installed at the top of the EOC**
- **Full coverage in the EOC basement**
- Solar powered — keeps relaying when the grid is down



Hands-on help — let’s get you on the mesh

W1JKU and KD4KHO will help you configure and troubleshoot right after the meeting.

Bring

- Your LoRa device (915 MHz)
- Phone with the MeshCore app
- USB data cable (not charge-only)
- Laptop with Chrome to flash

Resources

- Part 13 · MeshCore Operations (Rev 0.2 draft)
- Appendix B via Groups.io; Appendix C on the website
- cherokee-ares.org/news.html
- flasher.meshcore.io
- map.meshcore.io





Questions?