

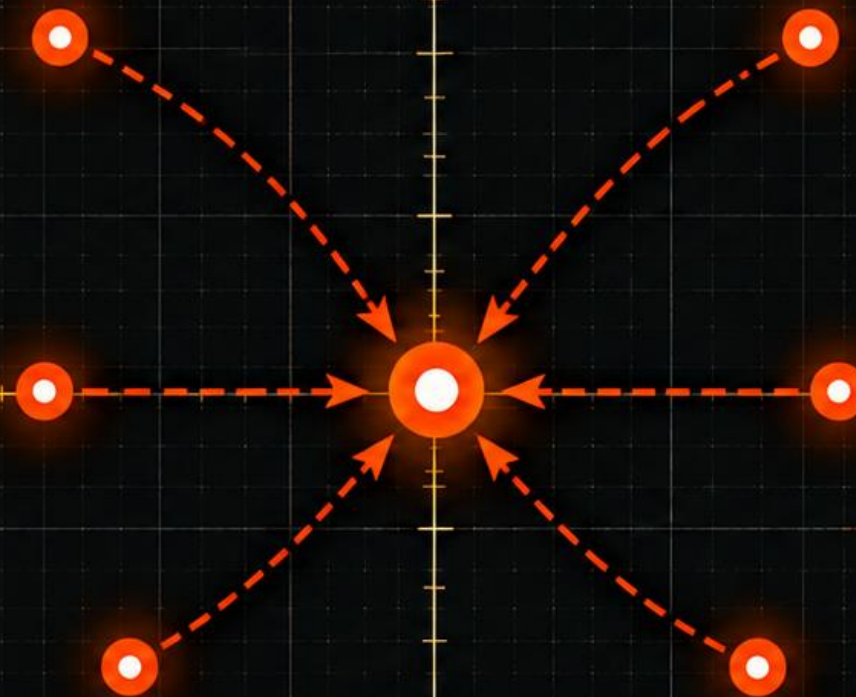
NET CENTRAL

Introducing Net Central v2

Enhanced emergency communications using APRS

John Rokicki, KC1VMZ

KC1VMZ



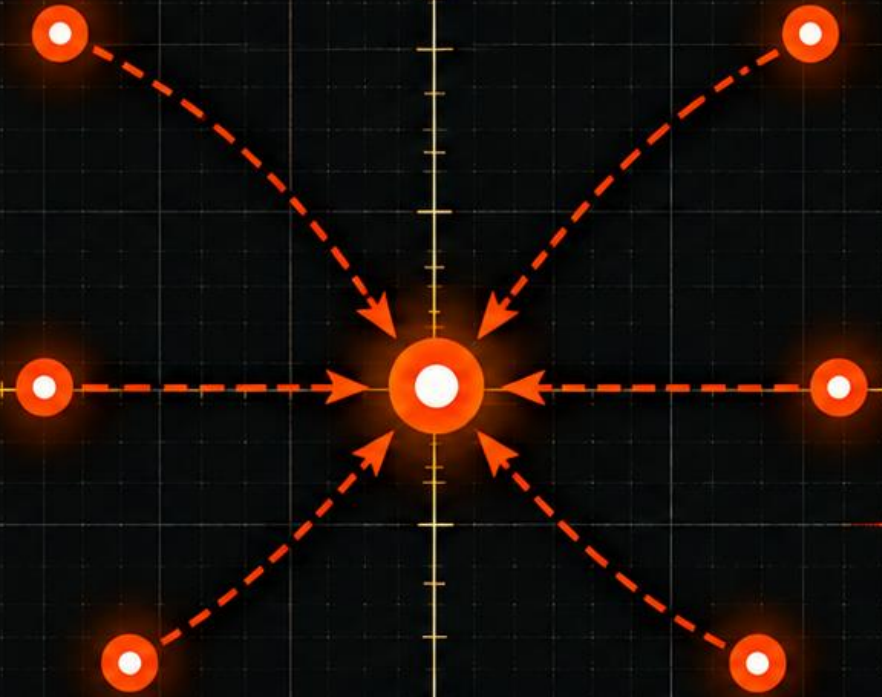
NET CENTRAL

01 / Introduction

Introduction

APRS, emergency communications and unexploited opportunities

KC1VMZ



Introduction

APRS technology features

Sending small tactical messages

GPS tracking

Weather information

Model real-life object

Current deficiencies

APRS lacks tools build to focus on EmComm

Applications and services rely on internet

Communication not organized

Objects are not interactive and data rich



Introduction

Current deficiencies

APRS lacks tools build to focus on EmComm

Applications and services rely on internet

Communication not organized

Objects are not interactive and data rich

Addressing the gaps

Model common EmComm behavior

Internet optional

Formalize and document communications

Objects are informative, dynamic and content rich



Introduction

Addressing the gaps

Model common EmComm behavior

Internet optional

Formalize and document communications

Objects are informative, dynamic and content rich

How Net Central does this

Establish communication nets using APRS

Support wide range of RF communication

Simple net management and ICS documents

Manage EmComm objects and their data



NET CENTRAL

Introducing Net Central v2

Net Central

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Net Details

Selected net

NEAPRS-1 — NE APRS Test Net

Call sign

NEAPRS-1

Name

NE APRS Test Net

Description

testing

Net Type

Open

Active

Live

Participant map

Participant map

Participant details

Call sign

KC1VMZ-4

Tactical Call sign

author

Status

ready

Status Color

Green

Frequency

10/4/2026, 7:35:54 PM

Checked In

10/4/2026, 7:37:40 PM

Last Heard

Reported position

Position Precision

Unknown

Latitude

Unknown

Longitude

Unknown

Transmit Watts

Power

Backup Power

Radio

Participants

Call sign

Status

Status color

Last heard

State

KC1VMZ-4 (author)

ready

Green

10/4/2026, 7:37:40 PM

Checked in

Messages

Time

From

To

Message

Delivery

10/4/2026, 7:35:54 PM

KC1VMZ-4

Net

Checked in

RECORDED

10/4/2026, 7:35:54 PM

NEAPRS-1

KC1VMZ-4

Welcome to NEAPRS!

SENT

10/4/2026, 7:35:54 PM

NEAPRS-1

KC1VMZ-4

You checked into net NEAPRS-1 - send H for help.

SENT

10/4/2026, 7:36:20 PM

NEAPRS-1

KC1VMZ-4

Tactical call sign updated

SENT

10/4/2026, 7:37:14 PM

KC1VMZ-4

Net

ready

RECORDED

10/4/2026, 7:37:14 PM

NEAPRS-1

KC1VMZ-4

Status updated

SENT

10/4/2026, 7:37:33 PM

NEAPRS-1

KC1VMZ-4

Q 1: everyone in place?

SENT

Questions

Q 1: everyone in place?

Answers

KC1VMZ-4: yes

APRS net management

Coordinated communication and tracking

Real-time and ICS reporting

Station discovery and classification

EmComm and generic objects

KC1VMZ

A diagram illustrating a network topology. It features a central node (a large orange circle) and two peripheral nodes (smaller orange circles) connected by dashed orange lines. The central node is also connected to a larger orange circle below it, which is further connected to two more nodes (smaller orange circles) below it. The entire network is set against a dark background with a grid pattern.

NET CENTRAL

Introducing Net Central v2

Net Central

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Net Details

Selected net: NEAPRS-1 — NE APRS Test Net

Callsign: NEAPRS-1
Name: NE APRS Test Net
Description: testing
Net Type: Open
Active: Live

Participant map

Map showing the location of participants in the Philippines.

Participants

Callsign	Status	Status color	Last heard	State
KC1VMZ-4 (author)	ready	Green	10/4/2026, 7:37:40 PM	Checked in

Participant details

KC1VMZ-4

author
ready
Green

Frequency: 10/4/2026, 7:35:54 PM
Checked In: 10/4/2026, 7:37:40 PM
Last Heard: 10/4/2026, 7:37:40 PM
Position Precision: Reported position
Latitude: Unknown
Longitude: Unknown
Transmit Watts: Unknown
Power: Unknown
Backup Power: Unknown
Radio: Unknown

Messages

Time	From	To	Message	Delivery
10/4/2026, 7:35:54 PM	KC1VMZ-4	Net	Checked in	RECORDED
10/4/2026, 7:35:54 PM	NEAPRS-1	KC1VMZ-4	Welcome to NEAPRS!	SENT
10/4/2026, 7:35:54 PM	NEAPRS-1	KC1VMZ-4	You checked into net NEAPRS-1 - send H for help.	SENT
10/4/2026, 7:36:20 PM	NEAPRS-1	KC1VMZ-4	Tactical callsign updated	SENT
10/4/2026, 7:37:14 PM	KC1VMZ-4	Net	ready	RECORDED
10/4/2026, 7:37:14 PM	NEAPRS-1	KC1VMZ-4	Status updated	SENT
10/4/2026, 7:37:33 PM	NEAPRS-1	KC1VMZ-4	Q 1: everyone in place?	SENT

Questions

Q 1: everyone in place?

Answers

KC1VMZ-4: yes

Open-source software for Windows and Linux

Browser-based user experience

Supports RF via KISS, TNC2, Kenwood

Supports internet APRS

KC1VMZ



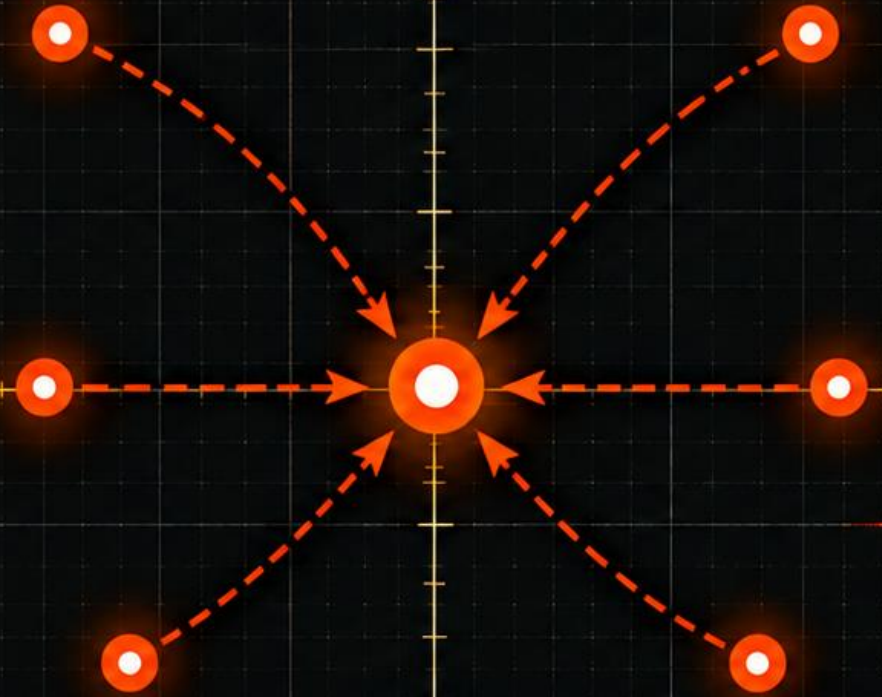
NET CENTRAL

02 / Net Management

Net Management

Net operations and lifecycle

KC1VMZ



NET CENTRAL

Net Management

Creating a net

Requires callsign and name

Optional location and description

Net behavior options

Create a net

Net callsign
NET001

Name

Description

Voice frequency

☒ Open APRS check-in

When unchecked, only expected or invited callsign roots may check in.

Expected callsigns
N0CALL N1ABC

Welcome message sent at check-in

APRS Symbol

Primary Alternate

Symbol
Node (/n)

Net Location

Manual entry Use map

Latitude

Longitude

Announce start and stop by bulletin
Yes

Remind participants to check out
Yes

Question reminder
No

Participant invite allowed
No

Communications
All eligible instances, including future ones

Create net Cancel

KC1VMZ



Net Management

Starting a net

Start immediately or on a scheduled basis.

Notify potential participants via bulletin.

Net objects beacons regularly.

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Net Details

Selected net

NEAPRS-1 — NE APRS Test Net

Edit

Secure

Callsign

NEAPRS-1

Name

NE APRS Test Net

Description

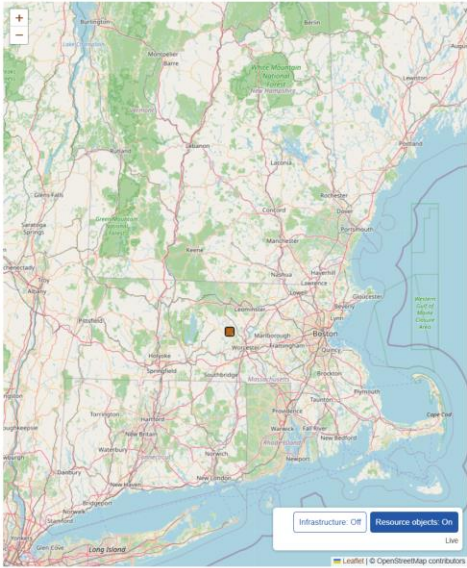
testing

Net Type

Open

Active - Live

Participant map



Infrastructure: Off

Resource objects: On

Live

Participants

Check in station

Invite stations

Callsign	Status	Status color	Last heard	State
KC1VMZ-4 (author)	ready	Green	10/4/2026, 7:37:40 PM	Checked in

Participant details

Edit Status

Edit Equipment

Send Message

Check out

Callsign

Tactical Callsign

Status

Status Color

Frequency

Checked In

Last Heard

Position Precision

Latitude

Longitude

Transmit Watts

Power

Backup Power

Radio

KC1VMZ-4

author

ready

Green

10/4/2026, 7:35:54 PM

10/4/2026, 7:37:40 PM

Reported position

Unknown

Unknown

Messages

Send message

Live view shows the latest 200 entries.

Time	From	To	Message	Delivery
10/4/2026, 7:35:54 PM	KC1VMZ-4	Net	Checked in	RECORDED
10/4/2026, 7:35:54 PM	NEAPRS-1	KC1VMZ-4	Welcome to NEAPRS!	SENT
10/4/2026, 7:35:54 PM	NEAPRS-1	KC1VMZ-4	You checked into net NEAPRS-1 - send H for help	SENT
10/4/2026, 7:36:20 PM	NEAPRS-1	KC1VMZ-4	Tactical callsign updated	SENT
10/4/2026, 7:37:14 PM	KC1VMZ-4	Net	ready	RECORDED
10/4/2026, 7:37:14 PM	NEAPRS-1	KC1VMZ-4	Status updated	SENT
10/4/2026, 7:37:33 PM	NEAPRS-1	KC1VMZ-4	Q 1: everyone in place?	SENT

Questions

Ask question

Q 1: everyone in place?

Answers

Record answer

KC1VMZ-4: yes

KC1VMZ



Net Management

Participant tracking

Real-time tracking of participant status and location.

Messages sent within net.

Questions and answers within net.

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Selected net

NEAPRS-1 — NE APRS Test Net

Edit

Secure

Callsign

NEAPRS-1

Name

NE APRS Test Net

Description

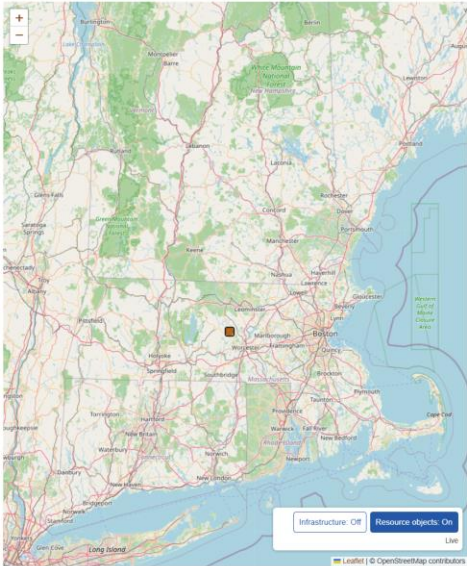
testing

Net Type

Open

Active - Live

Participant map



Infrastructure: Off

Resource objects: On

Live

Participants

Check in station

Invite stations

Callsign	Status	Status color	Last heard	State
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Participant details

Edit Status

Edit Equipment

Send Message

Check out

Callsign

Tactical Callsign

Status

Status Color

Frequency

Checked In

Last Heard

Position Precision

Latitude

Longitude

Transmit Watts

Power

Backup Power

Radio

KC1VMZ-4

author

ready

Green

10/4/2026, 7:35:54 PM

10/4/2026, 7:37:40 PM

Reported position

Unknown

Unknown

Messages

Send message

Live view shows the latest 200 entries.

Time	From	To	Message	Delivery
10/4/2026, 7:35:54 PM	KC1VMZ-4	Net	Checked in	RECORDED
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10/4/2026, 7:35:54 PM	NEAPRS-1	KC1VMZ-4	You checked into net NEAPRS-1 - send H for help	SENT
10/4/2026, 7:36:20 PM	NEAPRS-1	KC1VMZ-4	Tactical callsign updated	SENT
10/4/2026, 7:37:14 PM	KC1VMZ-4	Net	ready	RECORDED
10/4/2026, 7:37:14 PM	NEAPRS-1	KC1VMZ-4	Status updated	SENT
10/4/2026, 7:37:33 PM	NEAPRS-1	KC1VMZ-4	Q 1: everyone in place?	SENT

Questions

Ask question

Q 1: everyone in place?

Answers

Record answer

KC1VMZ-4: yes



Net Management

Operator participation

Stations can send a set of commands to join, participate and leave a net:

CI – check in
CO – check out

T callsign – set tactical callsign
F freq – set voice monitoring freq
X power – number of watts
E, B, Y – battery and radio types

S status – set status
STG – report status as Green
STY – report status as Yellow
STR – report status as Red



Net Management

Operator participation

Stations can send a set of commands to join, participate and leave a net:

I – get net info

L – list net participants

O – get participant status

H – help

M – send net message

MC – send net control message

R n – replay last n messages

Q text – send question to net

A n text – answer question n

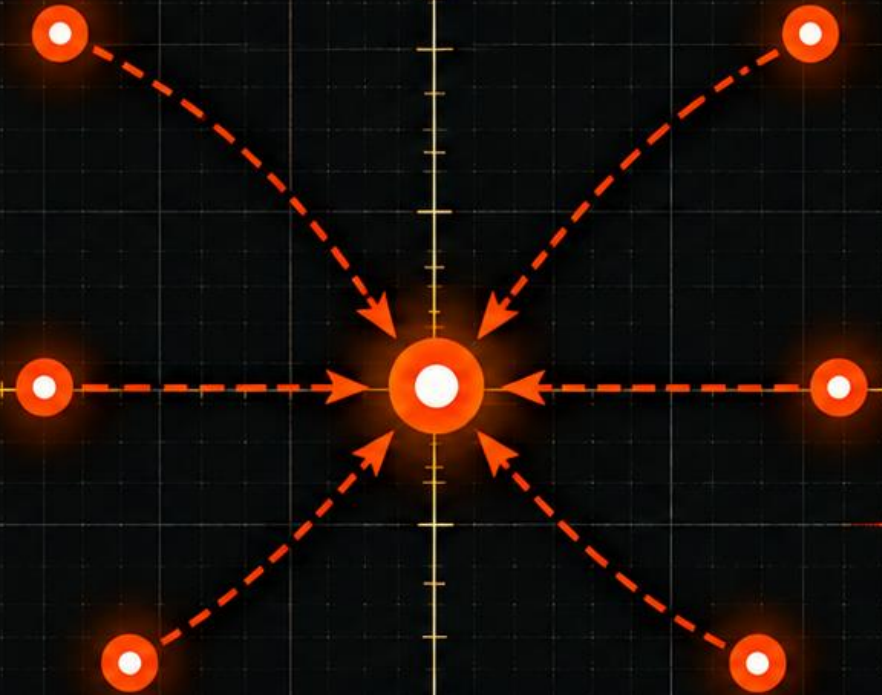
QL – list unanswered questions

QR n – report question n answers



Situational Awareness

What is around you and how can it help



Situational Awareness

Net participants vs. world

Track participants against infrastructure locations.

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Net Details

Selected net

NEAPRS-1 — NE APRS Test Net

Call sign

NEAPRS-1

Name

NE APRS Test Net

Description

testing

Net Type

Open

Active

Live

Participant map

Participants

Check in station

Invite stations

Call sign	Status	Status color	Last heard	State
KC1VMZ-4 (author)	ready	Green	10/4/2026, 7:37:40 PM	Checked in

Participant details

Edit Status

Edit Equipment

Send Message

Check out

Call sign

KC1VMZ-4

Tactical Call sign

author

Status

ready

Status Color

Green

Frequency

Checked In

10/4/2026, 7:35:54 PM

Last Heard

10/4/2026, 7:37:40 PM

Position Precision

Reported position

Latitude

Unknown

Longitude

Unknown

Transmit Watts

Power

Backup Power

Radio

Messages

Send message

Live view shows the latest 200 entries.

Time	From	To	Message	Delivery
10/4/2026, 7:35:54 PM	KC1VMZ-4	Net	Checked in	RECORDED
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10/4/2026, 7:36:20 PM	NEAPRS-1	KC1VMZ-4	Tactical call sign updated	SENT
10/4/2026, 7:37:14 PM	KC1VMZ-4	Net	ready	RECORDED
10/4/2026, 7:37:14 PM	NEAPRS-1	KC1VMZ-4	Status updated	SENT
10/4/2026, 7:37:33 PM	NEAPRS-1	KC1VMZ-4	Q 1 everyone in place?	SENT

Questions

Ask question

Q 1: everyone in place?

Answers

Record answer

KC1VMZ-4: yes



Situational Awareness

Discovery and classification

Track station location and status.

Classify station capabilities into types.

Filter on types and more.

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APRS Explorer

Information about APRS stations, infrastructure and objects.

Resource type: Stations Find Callsign, name or status Create object

Resource map

Resources (214)

ABZNE	STATION	https://www.ka2ddo.org/ka2ddo/YAAC.html	Oct 4, 2026, 07:13:01 PM EDT
AE12	STATION	*5y0222.900MHz D-STAR 73 from N5wanzey NH	Oct 4, 2026, 07:09:31 PM EDT
AJ1L	DIGIPEATER, STATION, WEATHER	Rockland, MA Fill in Digi & WX	Oct 4, 2026, 07:22:27 PM EDT
AJ12-10	STATION	read-write iGate Reading MA	Oct 4, 2026, 05:33:20 PM EDT
AJ12B-10	STATION		Oct 4, 2026, 07:28:38 PM EDT
AK12-9	STATION	263/000/A=000000Paul - AK1P	Oct 4, 2026, 06:55:16 PM EDT
ALAMOS	DIGIPEATER, STATION, WEATHER	=L>-7E2Y">_IG_/_g_-1094h23b...LoRa APRS Digi TRES ALAMOS 433.775MHz BW125 SF7 CR4.6 de N7AIL, Batt=4.23V Ext=21.90V	Oct 4, 2026, 07:25:45 PM EDT

AJ1L

Callsign

Last Heard

State

Status

Symbol

Types

Comment

Ignored

Tracked Station?

Location

AJ1L

Oct 4, 2026, 07:22:27 PM EDT

No

Rockland, MA Fill in Digi & WX

Weather station (/)

DIGIPEATER, STATION, WEATHER

@0419224205.64N/07054.25W_090/000g001h058/000p001P001h01b10203 Rockland, MA WX & Digi

No

No

-70.90416666666667, 42.094

View details

Start tracking

Ignore

KC1VMZ

Situational Awareness

Interactive objects

Model important real-life EmComm resources like EOCs and Shelters.

Maintain resource-specific information.

Create object

Callsign

RUTEOC-1

Type

Net Central EOC Object

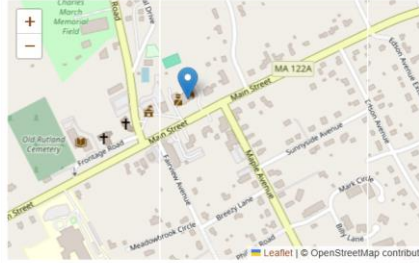
Object Location

Manual entry

Use map

Click the map to select the object location. The marker can be dragged.

Latitude: 42.377049 - Longitude: -71.954223



Comment

Regional Dispatch

APRS Symbol

Primary

Alternate

Symbol

Emergency Operations Center (/o)

☒ Active (send periodic beacons)

Communications

All eligible instances, including future ones

Create

Cancel

Object Details

Edit

Withdraw object

Callsign

RUTEOC-1

Location

-71.954223, 42.377049

Status

Active

Symbol

Emergency operations center (/o)

Comment

Regional Dispatch

Contact information

Update

Director Name

John Smith

Incident Commander Name

Joe Underling

Reported

10/4/2026, 7:01:20 PM

Mobilization information

Update

Eoc Name

Rutland Fire (test)

Status

Normal

Level

1

Reported

10/4/2026, 7:01:36 PM

Contact information history

Reported	Director Name	Incident Commander Name
10/4/2026, 7:01:20 PM	John Smith	Joe Underling

Mobilization information history

Reported	Eoc Name	Status	Level
10/4/2026, 7:01:36 PM	Rutland Fire (test)	Normal	1

KC1VMZ

Situational Awareness

Interactive objects

Create interactive objects for any use.

Maintain key:value pairs.

Set and get from radio or user interface.

Object Details

EditWithdraw object

Callsign	DUNKS-1
Location	-71.955824, 42.375732
Status	Active
Symbol	Restaurant (VR)
Comment	Dunks

Resource values

Add

Baguettes: No	Remove
Coffee: Yes	Remove
Donuts: Yes	Remove

Object Security

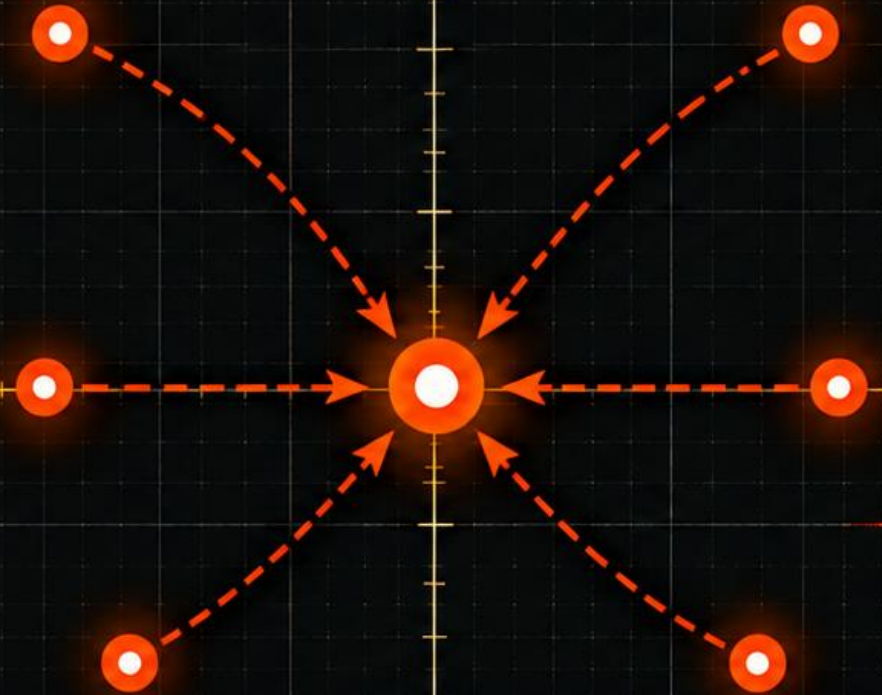
[Manage object security in Settings](#)

No object security rules for this station.



Advanced Features

Leveraging services, being secure and sharing data



Advanced Features

Feature

Description

Integration with APRS services

Leverage WHOIS, WLNK-1, and NTS

Off-line maps

Cache and use maps off-grid

Object security

Secure object data by callsign or relative location

Net management over APRS

Start ad-hoc nets over APRS rather than the browser

Federated systems

Allow Net Central deployments to recognize each other

KC1VMZ



NET CENTRAL

Questions?

Thank you

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KC1VMZ

