

Portable MESH Relay Station

Ventura County
Sheriff's Department

FlashMob

Thousand Oaks
Police Department

Visitor Parking

Olsen Rd

Hardy Ln

AB6BW-PORTABLE-HAPac

W6BI-LINK-NS-5G

W6BI-LINK-NS-2G

W6BI-LINK-PB-5G

WD6EBY-VC-SouthMtn-5G

RF Link to

SE-Sector-5G

CVARC's first mesh network "Flashmob"

February 23, 2020

Bill Woods - AB6BW

Portable MESH Relay Station

- Objective

Provide a link between the VC AREDN Mesh and the Parking Lot / Conference Room at the East County Sheriff's Station in support of CVARC's FlashMob event.

- Problem

- Best Node (**WD6EBY-VC-SouthMtn-SE-Sector-5G**) not visible due to Noll to the south of ECSS.

- Solution

- Set up relay station on Hardy Ln across Olsen Rd from ECSS.
 - **WD6EBY-VC-SouthMtn-SE-Sector-5G** visible from upper Hardy Ln
 - ECSS Conference Room and Parking Lot visible from middle Hardy Ln

Portable MESH Relay Station

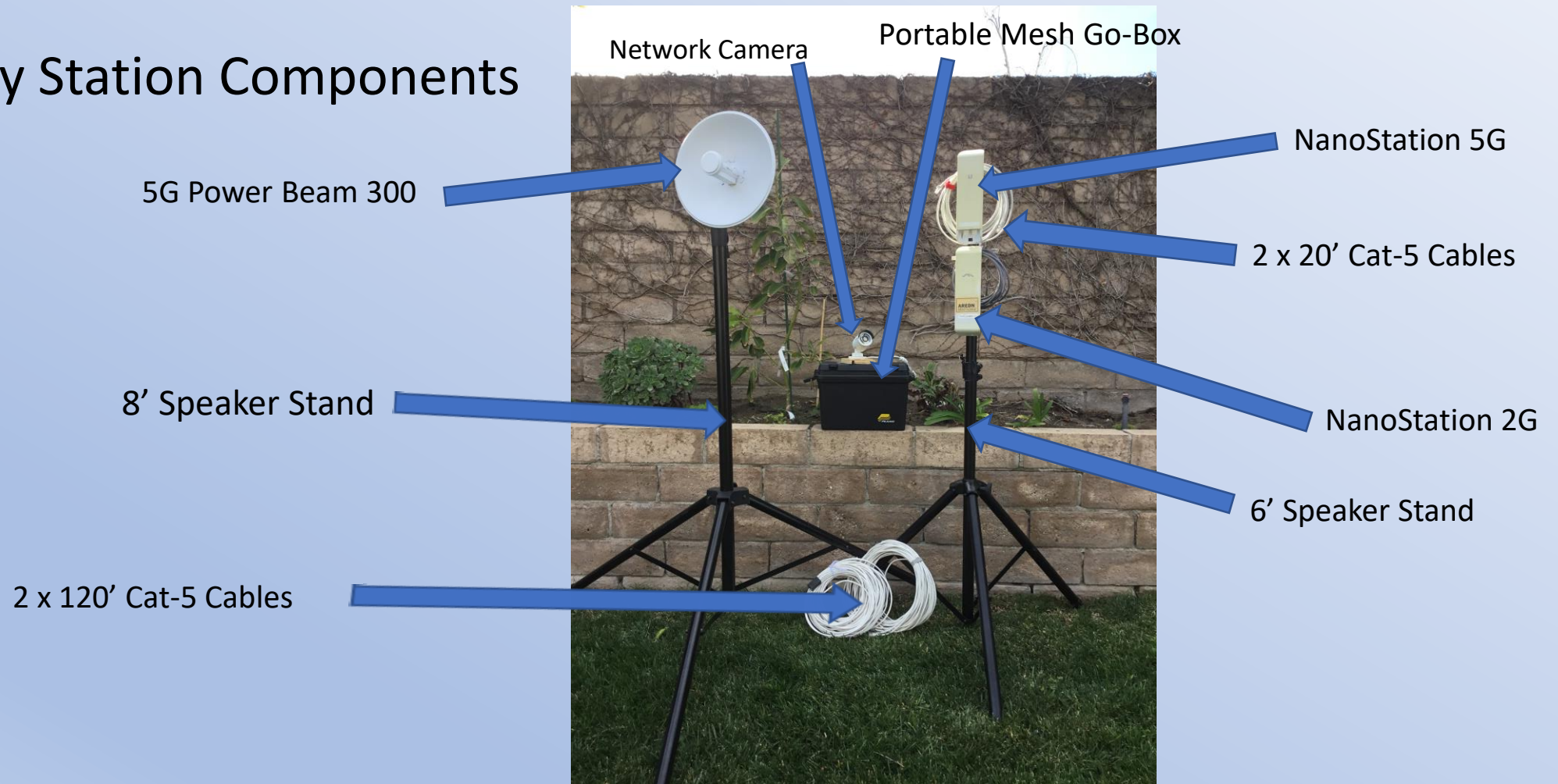
View of South Mountain



Note: picture is actually view from Moorepark Country Club but is similar to view from Hardy Ln

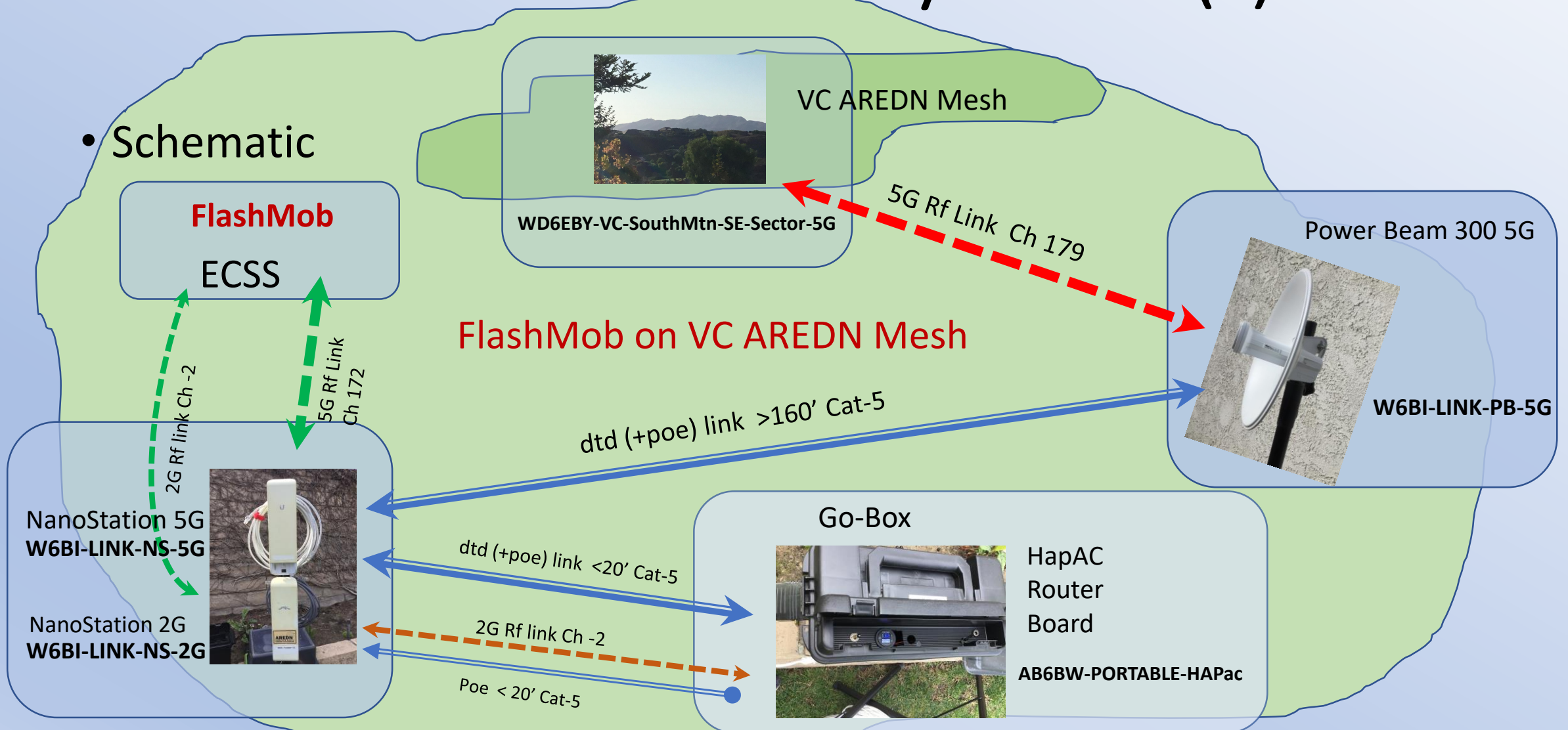
Portable MESH Relay Station

- Relay Station Components



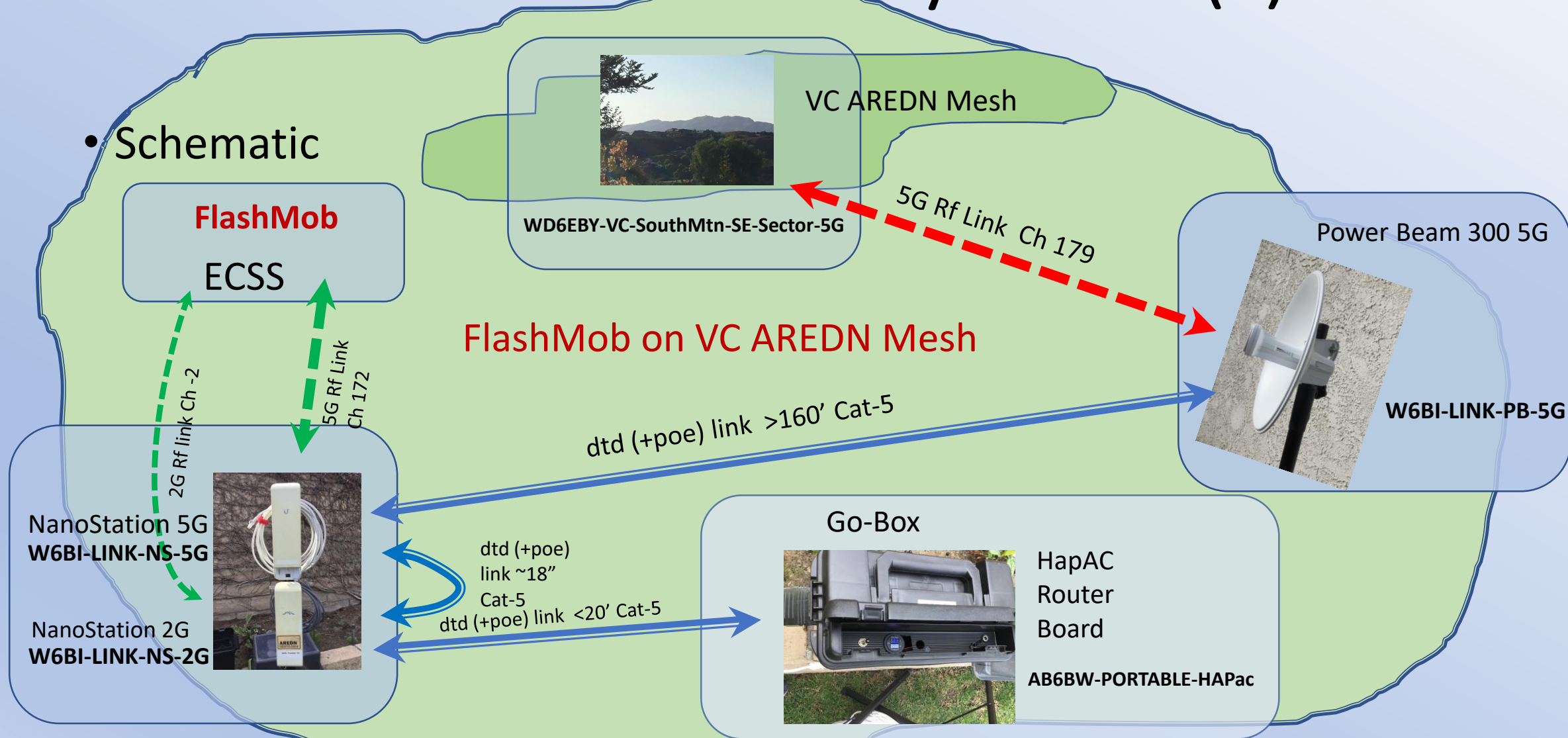
Portable MESH Relay Station (a)

- Schematic



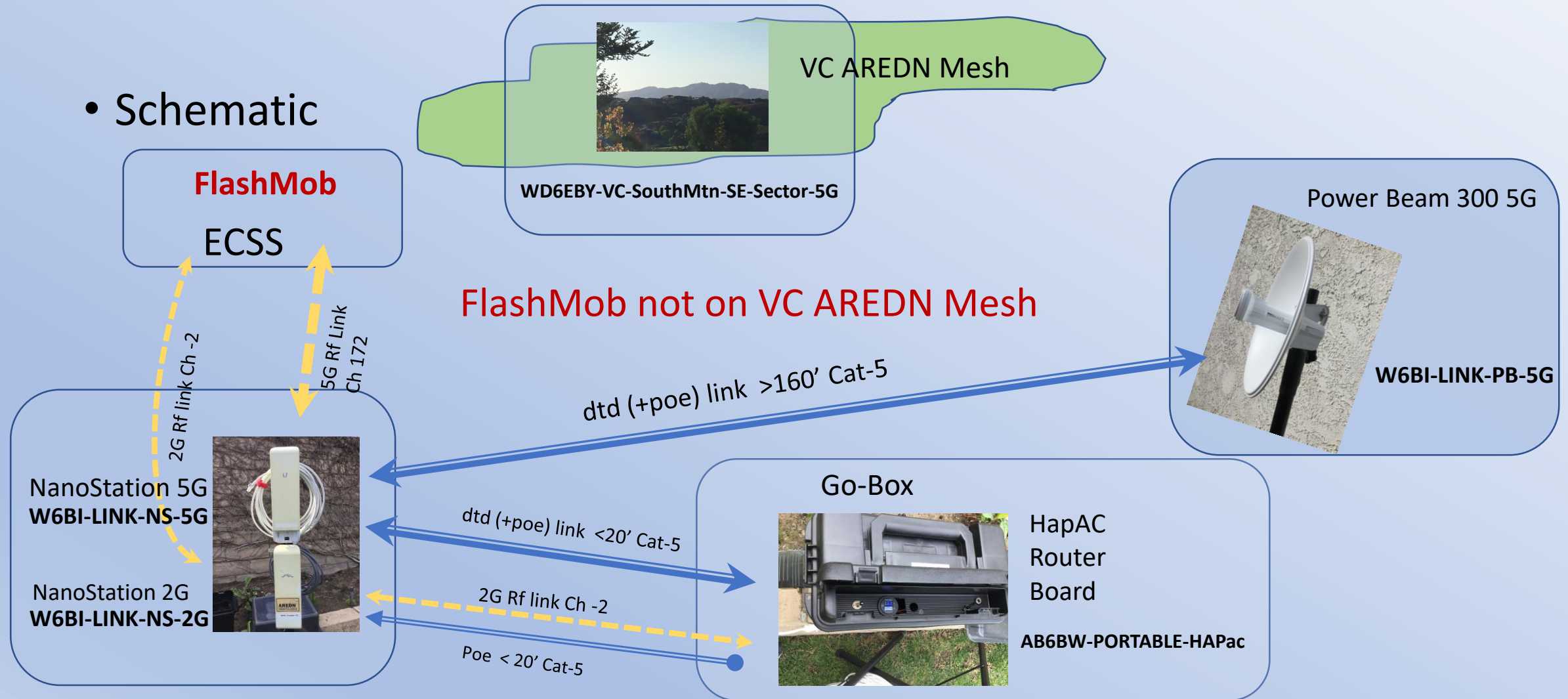
Portable MESH Relay Station (b)

- Schematic



Portable MESH Relay Station

- Schematic



Portable MESH Relay Station

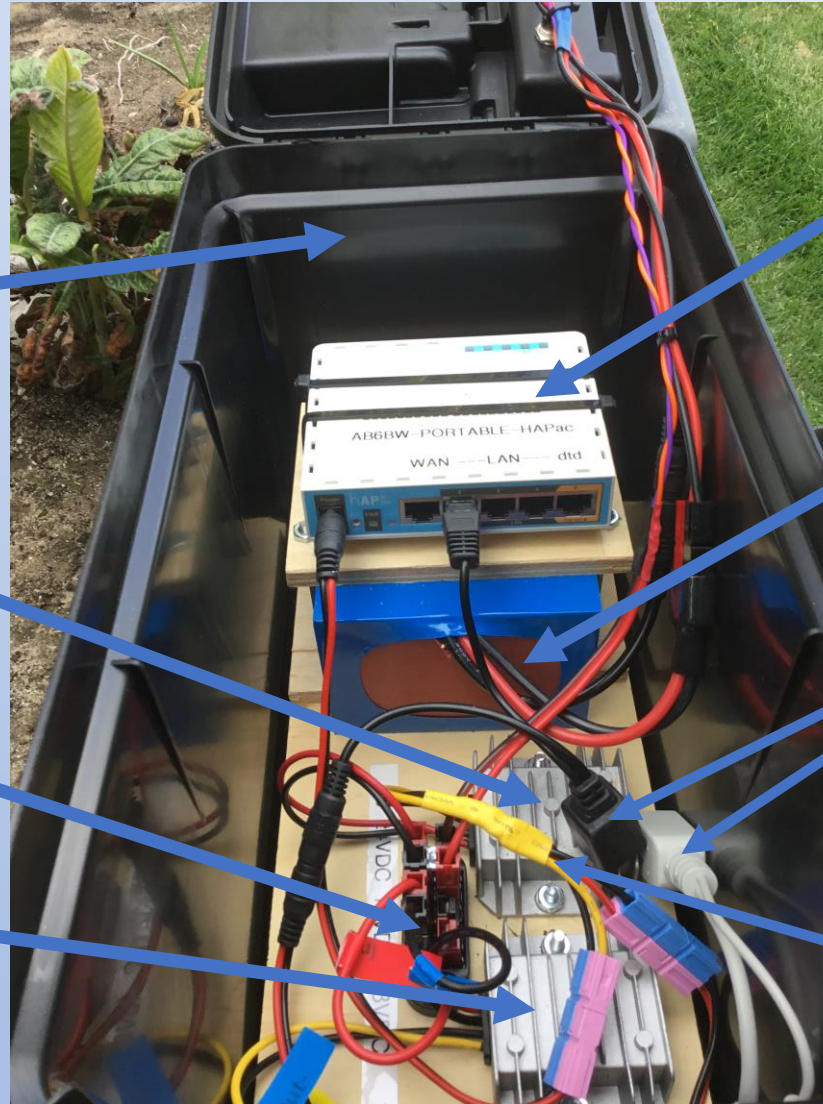
- Mesh Go Box.
 - **AB6BW-PORTABLE-HAPac 2G** Ch -2
- Ubiquiti PowerBeam PBE-M5-300 DO NOT CONNECT FROM FLASHMOB
 - **W6BI-LINK-PB-5G** Ch 179 RF Link to South Mtn.
- Ubiquiti NanoStation NSM5, 5GHz
 - **W6BI-LINK-NS-5G** Ch 174 RF Link to FLASHMOB
- Ubiquiti NanoStation M2
 - **W6BI-LINK-NS-2G** Ch -2 RF Link to FLASHMOB

Portable MESH Relay Station

- Mesh Go Box. **AB6BW-PORTABLE-HAPac**
 - Bioenno 15 AHr Battery
 - MikroTik hAP AC RouterBoard **AB6BW-PORTABLE-HAPac** 2G Ch -2
 - RF Link to **W6BI-LINK-NS-2G**
 - dtd +poe Link (port 5) to **W6BI-LINK-NS-5G** and thru to **W6BI-LINK-PB-5G**
 - Ethernet connection to IP Camera (port 2)
 - 12 Volt to 24 Volt Converter
 - Power to hAP-AC Router Board and **W6BI-LINK-NS-2G**
 - Power to **W6BI-LINK-NS-2G** via passive poe injector
 - 12 Volt to 48 Volt Converter
 - Power to IP Camera via passive poe injector
 - IP Camera

Portable MESH Relay Station

- Mesh Go Box.



Ammo Box

MikroTik hAP ac lite
RouterBoard

Bioenno 15 AHr Battery

DC to DC 12v Step Up
to 24V 3A Converter

Powerwerx 4 Position
Power Distribution Block

DC 12V Step-Up to DC
48V 2A Converter

Passive poe injector

Everything mounted
to plywood board that
lifts out of Ammo Box

24 Vdc Dist. Y
Note: non-std Power pole
keying and color

Portable MESH Relay Station

- Mesh Go Box. **AB6BW-PORTABLE-HAPac**
 - Bioenno 15 AHr Battery 12V, 15Ah LFP Battery (PVC, BLF-1215A)
 - Quicksilver Radio - Play-Series™ Volt/Ammeter
 - Available on Amazon
 - MikroTik hAP ac lite RouterBoard (RB952Ui-5ac2nD-US)
 - JahyShow US Ship DC to DC 12v Step Up to 24V 3A 72W Waterproof Converter Voltage Regulator Module Transformer
 - uxcell Voltage Converter Regulator DC/DC DC 12V Step-Up to DC 48V 2A 96W Power Boost Transformer Waterproof
 - Hikvision DS-2CD2042WD-I 4MP HD Network IP Bullet Camera 4mm Lens
 - Plano 1612 Deep Water Resistant Field Box with Lift Out Tray
 - DPDT Switch
 - E-outstanding 5-Pack DC-099 5.5 mm x 2.1mm 30V 10A DC Power Jack Socket, Threaded Female Panel Mount Connector Adapter
 - Valley Enterprises Powerwerx 4 Position Power Distribution Block for use with Anderson Powerpole Connectors 15/30/45 Amp PD-4
 - Misc. Anderson Power Pole Components, DC Barrel Connectors, wire, shrink tube, etc
 - Cat-5 Cables as required
 - Future Additions – Raspberry Pi, Solar Charge Controller

Portable MESH Relay Station (a)

- Ubiquiti PowerBeam PBE-M5-300 **W6BI-LINK-PB-5G** Ch 179 10 MHz
 - Link to **WD6EBY-VC-SouthMtn-SE-Sector-5G**
 - dtd (with poe) link to Nanostation M5
 - ***DO NOT LINK from parking lot or conference room***
- Ubiquiti NanoStation NSM5, 5GHz **W6BI-LINK-NS-5G** Ch 174 10 MHz
 - dtd link (with poe) to **AB6BW-PORTABLE-HAPac**
 - dtd link (with poe pass through) to **W6BI-LINK-PB-5G**
 - ***Rf links to Parking Lot and conference room***
- Ubiquiti NanoStation M2 **W6BI-LINK-NS-2G** Ch -2 10MHz
 - Rf link to **AB6BW-PORTABLE-HAPac**
 - ***Rf links to Parking Lot and conference room***

Portable MESH Relay Station (b)


- Ubiquiti PowerBeam PBE-M5-300 **W6BI-LINK-PB-5G** Ch 179 10 MHz
 - Link to **WD6EBY-VC-SouthMtn-SE-Sector-5G**
 - dtd (with poe) link to Nanostation M5
 - ***DO NOT LINK from parking lot or conference room***
- Ubiquiti NanoStation NSM5, 5GHz **W6BI-LINK-NS-5G** Ch 174 10 MHz
 - dtd link (with poe pass through) to **W6BI-LINK-PB-5G**
 - dtd link (with poe pass through) to **W6BI-LINK-NS-2G**
 - ***Rf links to Parking Lot and conference room***
- Ubiquiti NanoStation M2 **W6BI-LINK-NS-2G** Ch -2 10MHz
 - dtd link (with poe pass through) to **AB6BW-PORTABLE-HAPac**
 - dtd link (with poe pass through) to **W6BI-LINK-NS-5G**
 - ***Rf links to Parking Lot and conference room***

W6BI-LINK-NS-2G status

8 ways you can take screenshots

← → ↻ ⓘ Not secure | localnode:8080/cgi-bin/status ☆ B ⋮

Apps



W6BI-LINK-NS-2G

Location Not Available

[Help](#)

Refresh

Mesh Status

WiFi Scan

Setup


Select a theme ▼

Wifi address	10.66.54.180 / 8	Signal/Noise/Ratio	-19 / -95 / 76 dB	<div>Charts</div>
LAN address	10.17.181.161 / 29	firmware version	1307-5244948	
WAN address	none	configuration	mesh	
default gateway	10.214.157.49 AB6BW-Shack-Node	system time	Tue Feb 18 2020 22:12:58 UTC	
SSID	AREDN-10-v3	uptime	3 min	
Channel	-2	load average	0.29, 0.28, 0.12	
Bandwidth	10 Mhz	free space	flash = 1012 KB /tmp = 13648 KB memory = 9784 KB	
		OLSR Entries	Total = 1782 Nodes = 541	

Part of the AREDN™ Project. For more details please [see here](#)

W6BI-LINK-NS-5G status

Not secure | w6bi-link-ns-5g.local.mesh:8080/cgi-bin/status



W6BI-LINK-NS-5G

Location Not Available

[Help](#)

Refresh

Mesh Status

WiFi Scan

Setup

Select a theme ▼

Wifi address

10.124.238.53 / 8

LAN address

10.231.113.169 / 29

WAN address

none

default gateway

10.11.31.165
dtdlink / mid1

SSID

AREDN-10-v3

Channel

176

Bandwidth

10 Mhz

Signal/Noise/Ratio

N/A

Charts

firmware version

configuration

1138-6e19994
mesh

system time

Tue Feb 18 2020
22:30:23 UTC

uptime

load average

8 min
0.10, 0.12, 0.08

free space

flash = 1120 KB
/tmp = 30252 KB
memory = 32736 KB

OLSR Entries


Total = 1766
Nodes = 544

Part of the AREDN™ Project. For more details please [see here](#)

W6BI-LINK-PB-5G status

Not secure | 10.10.31.165:8080/cgi-bin/status

Apps



W6BI-LINK-PB-5G

Location Not Available

[Help](#)RefreshMesh StatusWiFi ScanSetup

Select a theme ▾

Wifi address

10.10.31.165 / 8

LAN address

10.80.253.41 / 29

WAN address

none

default gateway

10.146.185.231
AB6BW-VC-QTH-5G

SSID

AREDN-10-v3

Channel

172

Bandwidth

10 Mhz

Signal/Noise/Ratio

-81 / -95 / 14 dB

Charts

firmware version

1022-412a1e5

configuration

mesh

system time

Tue Feb 18 2020
21:12:13 UTC

uptime

0 min

load average

0.79, 0.25, 0.08

free space

flash = 1148 KB
/tmp = 30304 KB
memory = 37044 KB

OLSR Entries

Total = 385
Nodes = 114

Part of the AREDN™ Project. For more details please [see here](#)

2/16/2020

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