

# AMPR Ağı Telsiz Üzerinden Internet



Sunum  
Barış DİNÇ  
TA7W / OH2UDS



Moderatör  
Volkan Şamlı ( TA1DE )

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# İçerik

- AMPR Nedir ?
  - Tarihçe
  - Programlar
  - 44.x.x.x IP adresleri
  - Yüksek Hızlı AMPR Ağrı
  - Afet Haberleşme Sistemleri
-

# AMPR Nedir ?

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**AMPR :** Amateur Packet Radio

**ARDC :** Amateur Radio Digital Communications

TAPR : Tucson Amateur Packet Radio (1980)

X.25 —→ AX.25

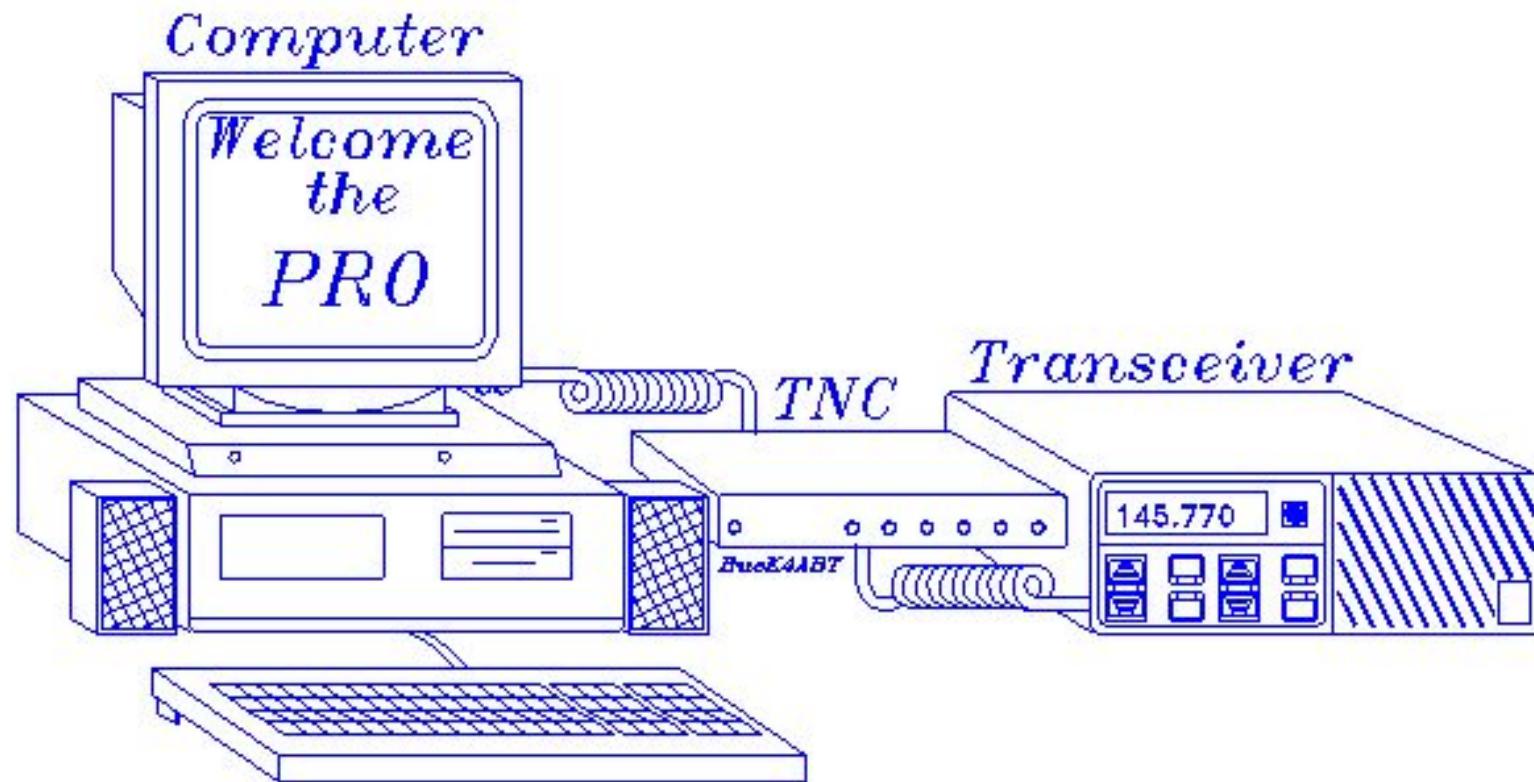
TNCs (Terminal Node Controllers)

- Mesaj birden fazla paketle gider
- Bir kanal pekçok kişi tarafından kullanılabilir
- PC yerine TNC
- Paket tekrarı
- Hata kontrolü
- 

**FSK :** Frequency Shift Keying (1200 - 2200 Hz)

Address		Information			Flag	
Flag	Control				FCS	Flag
8	14 to 70	1	up to 256		2	8

# Bir Paket Radyo İstasyonu Bileşenleri



# Tarihçe -

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AEA PAKRATT 232

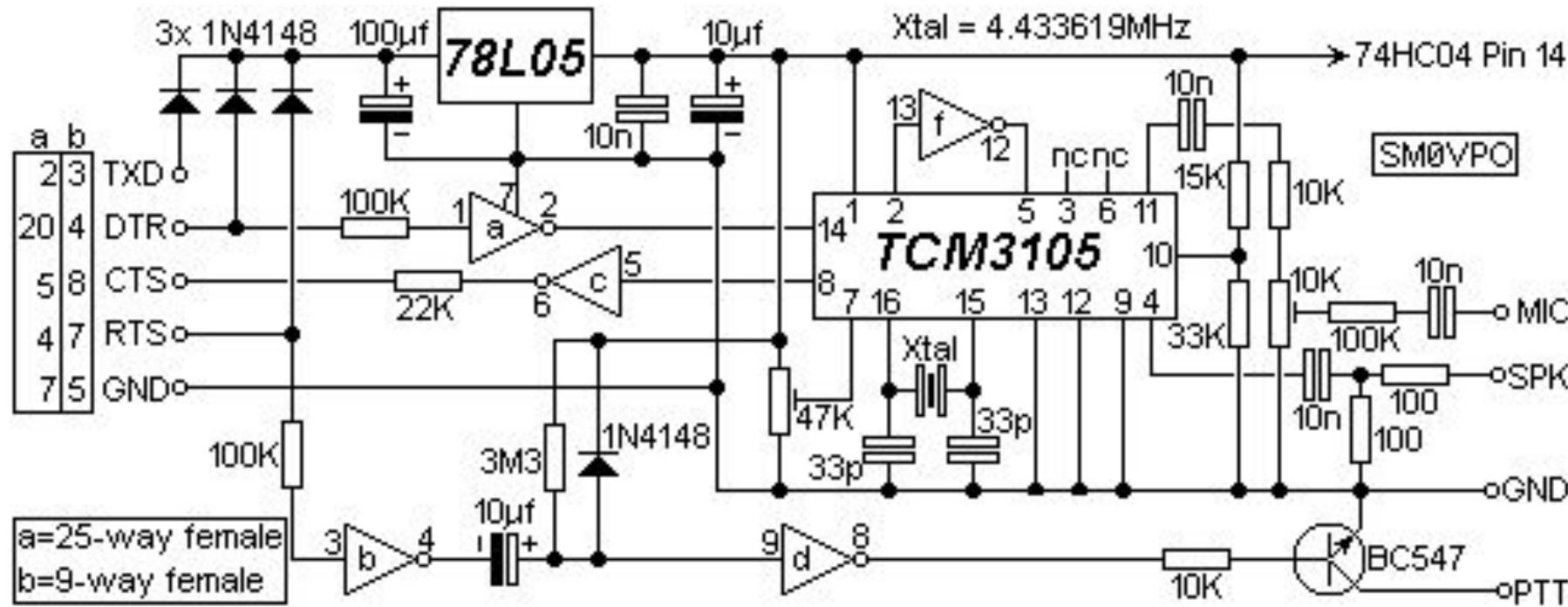


# ANTRAK Paket Modem AM7911 - TCM3105

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# TCM3105 Modem



# Programlar

The screenshot shows a terminal window with the following text:

(C) 1994 Hardware: DG3RBU Software: DL8MBT Test/Distrib. (DL): DL5RQ DL5RL  
For Amateur Radio ONLY, unlicensed distribution is prohibited

QRV ITAGKL> Disconnected mem=040 ln=289 n2=79 o=0 fr= 10 k= 0 20:34 1 I

About

S2 BayCom Packet-Radio Software  
Version 1.60

Copyright (c) 1992 Florian Radlherr,  
Running on BayCom-Modem by DG3RBU

The software bearing this display is NOT freeware or  
shareware. It may be copied for Amateur Radio usage BUT:  
- It may not be sold except by a BayCom licensee or dealer  
- It may not be given away with a commercial product  
- It may not be uploaded to a BBS (Sysops take note)  
- It is a fraud to remove the copyright notices and  
this screen of license terms from the software

press any key

1: --- 2: --- 3: --- 4: --- 5: --- 6: --- 7: --- S2 BayCom



# Programlar

nw8l@KAPPA:~/git-work/arim

File Edit View Search Terminal Help

--- ARIM v0.20 by NW8L [Attached to TNC 1 - arim/KAPPA1] ---

[06:44:09] >> [B] |B01|KA8RYU|0026|DM65|TNC-1 (cygwin32)  
[06:45:11] >> [M] |M01|W1AW|QST|004F|F884|Greetings from the ARRL, vi  
[06:47:16] >> [M] |M01|KA8RYU|NW8L|0050|B714|Sorry, I'm running late,  
[06:47:19] << [A] |A01|NW8L|KA8RYU|  
[06:48:02] >> [B] |B01|H7KZ|0024|DM65|TNC-1 (cygwin32)  
[06:48:50] << [Q] |Q01|NW8L|H7KZ|001E|907A|heard  
[06:49:12] >> [R] |R01|H7KZ|NW8L|0043|2C66|Calls heard (LT): [A] NW8L  
[06:49:46] << [I] NW8L:[DM65]  
[06:51:17] << [M] |M01|NW8L|KA8RYU|0043|C43D|Ok, I'll be at the house  
[06:51:38] >> [A] |A01|KA8RYU|NW8L|  
[06:52:31] << [M] |M01|NW8L|RRNET|004F|8A94|Don't forget, we moved th  
[06:53:38] >> [U] Testing unproto mode de KA8RYU  
[06:54:31] >> [B] |B01|H7KZ|0024|DM65|TNC-1 (cygwin32)  
[06:55:05] << [U] It's working here all right de NW8L

TRAFFIC MONITOR

>> c:PTT TRUE  
>> c:PTT FALSE  
>> c:FECSEND now TRUE  
>> c:BUFFER 0  
>> c:PTT TRUE  
>> c:PTT FALSE  
>> c:BUFFER 0  
>> c:NEWSTATE DISC  
>> c:PTT FALSE

TNC COMMANDS

Hot keys: <SP> Cmd Prompt, 'r' Recents, 'f' FEC Ctrl 'h' Help, 'q' Quit.

WINMOR Sound Card TNC

Settings Abort Help Select Test Cycle OFF

Connection State: KN6KB  
Receive: Rcv Level: 0.1 Hz  
Offset: -200 +200  
ISS: IDLE IRS  
Transmit: Xmt Frame:  
Rcv Frame: Long 15 Car QPSK Data  
Bytes Received: 6464  
Data bytes queued: 000000  
Data bytes sent: 0  
Data bytes confirmed: 000000  
500 Waterfall 2kHz 2500

Advanced Packet Radio Decoder #1

Wave-in device in use: Windows default  
Mixer device in use: C-Media Wave Device  
Mixer line in use: Line In  
Audio level: 100%  
Log file: D:\WINRADIO\Plugins\TestPacket.log  
Log date format: dd/MM/yyyy  
Baudrate: 2400bps - A  
1200bps 2400bps - B

SM2TEZ>G0LQP <V2 UA R F>  
SM2TEZ>G0LQP <V2 I C SO R0> :  
[FBB-5.15-ABFHM\$]  
You only have limited access on this port.  
2:SM2TEZ>

Please enter your

Input WAV

Clear display XRS

CPU usage 3.1 %

Help About

# Packet Radio Sesleri

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300 Baud HF Packet



1200 Baud VHF Packet



2400 Baud VHF Packet



9600 Baud UHF Packet

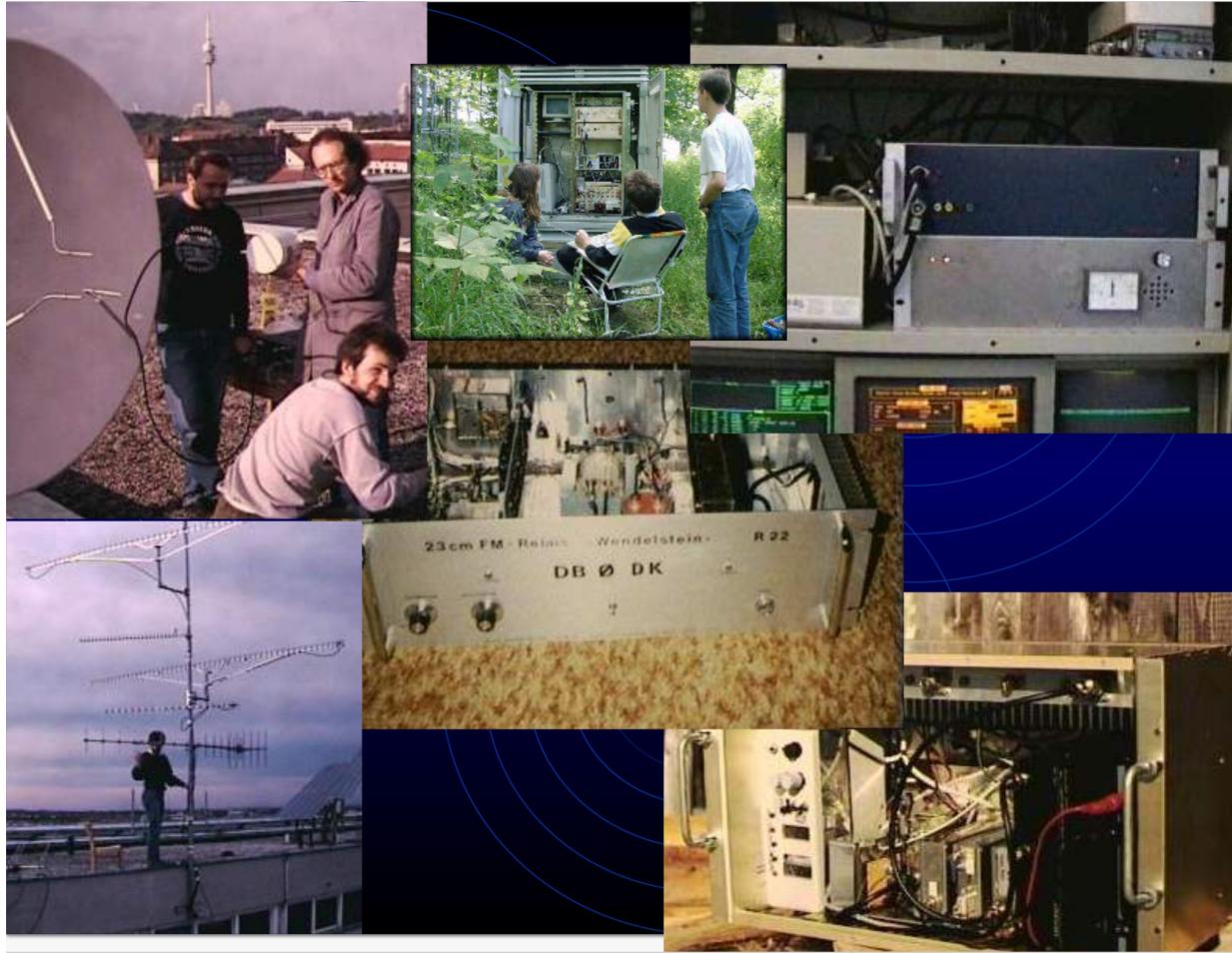


# Packet Modemler



# Digipeater

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# Ankara BBS

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Call : TA2BBS  
Sysop : Fatih Oran  
QTH : Ankara - Dikmen



Call : TA2BOL  
Sysop : Fatih Oran  
QTH : Bolu Dagi

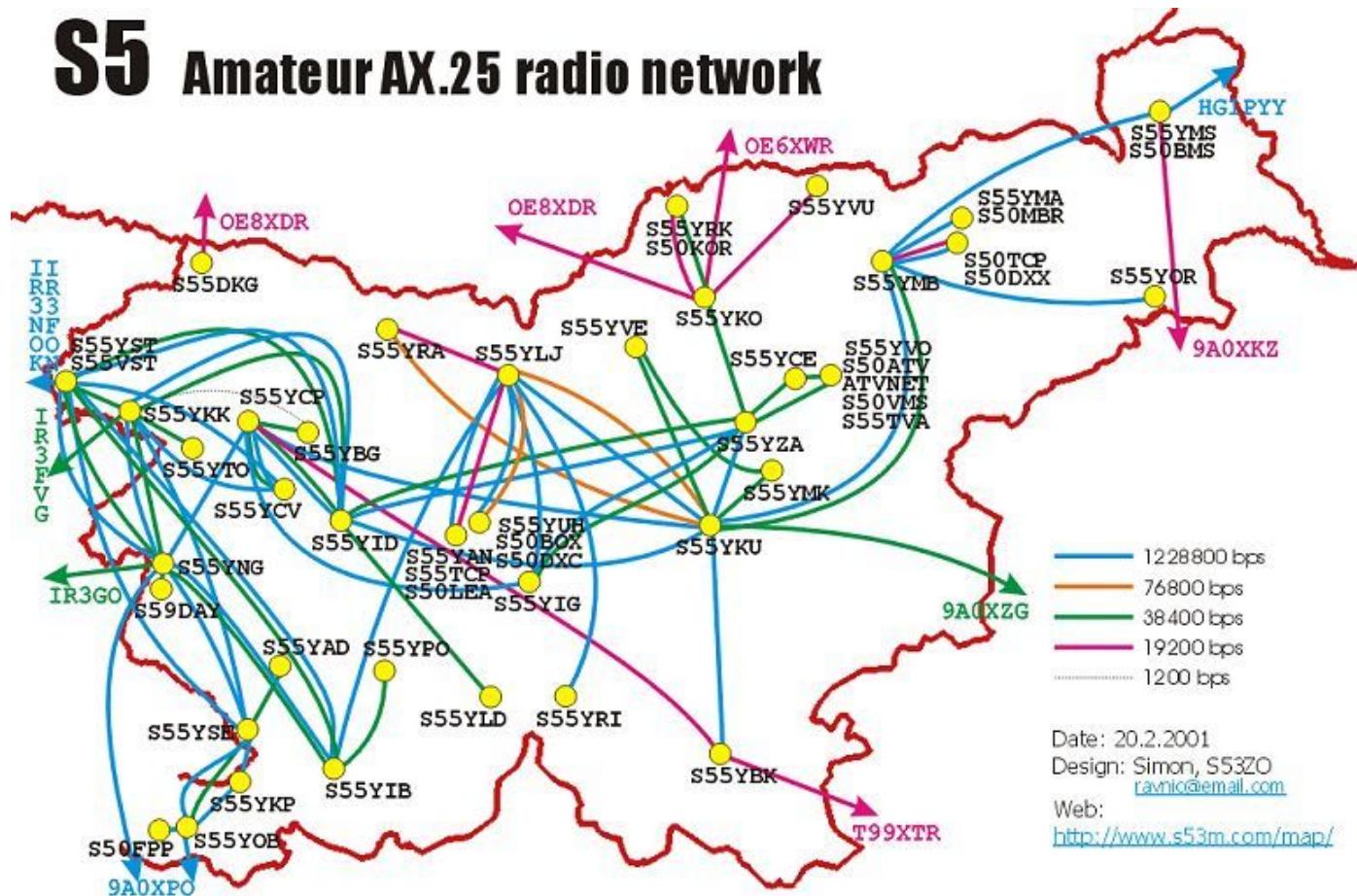


# TA2KD A.R.D. GATEWAY

SYSOP : TA7W BARIS



## **S5 Amateur AX.25 radio network**



Date: 20.2.200

Design: Simon, S53ZC

144-1

Web:

# 1990'lar Italia

## Collocazione Geografica delle Tratte Radio



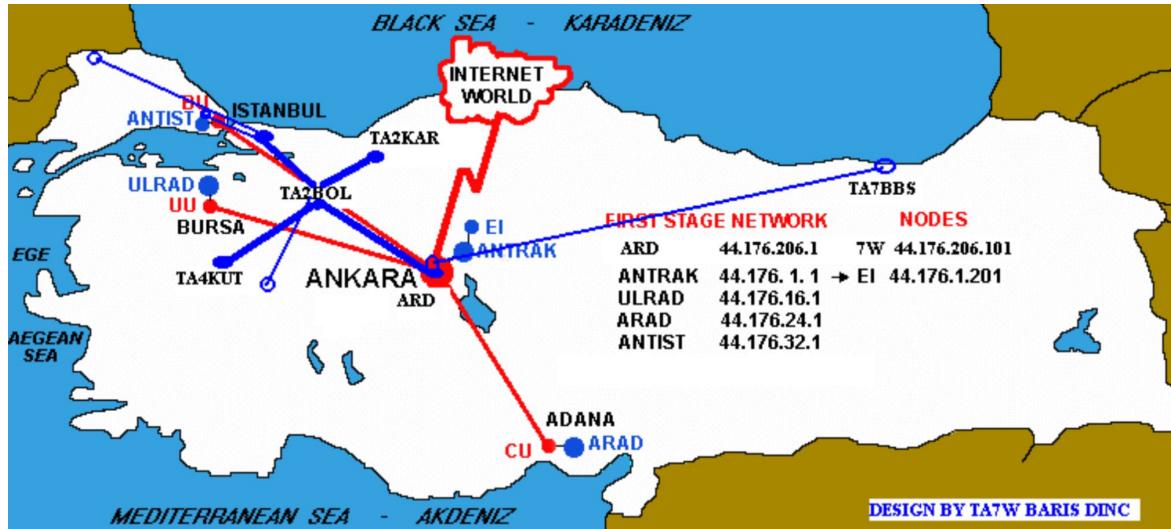
### Velocità di cifra

- 2 Mbit / sec
- 8 Mbit / sec
- 34 Mbit / sec

### Siti

- Sedi Universitarie
- Ponti Radio

# 2000 Turkiye



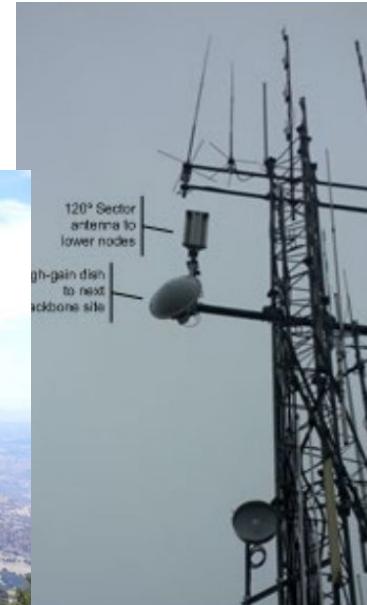
TA2KD – TA2BBS (19K2 Ankara Local)  
TA2BBS – TA2BOL (9K6 Ankara – Bolu Dağı)  
TA2BBS – TA7BBS (1K2 Ankara – Giresun)  
TA2BOL – TA4KUT (9K6 Bolu – Kutahya)  
TA2BOL – TA2IMT (9K6 Bolu – İzmit)  
TA2IMT – TA2IST (9K6 İzmit – İstanbul)  
1K2 bağlı diğer iller Kırklareli, Eskişehir, İzmir, Sakarya, Trabzon, Rize

**HEDEF**  
**2002 Yılında 1.2MBit**  
**Altyapının Tamamlanması**

# AMPR (Bugün)

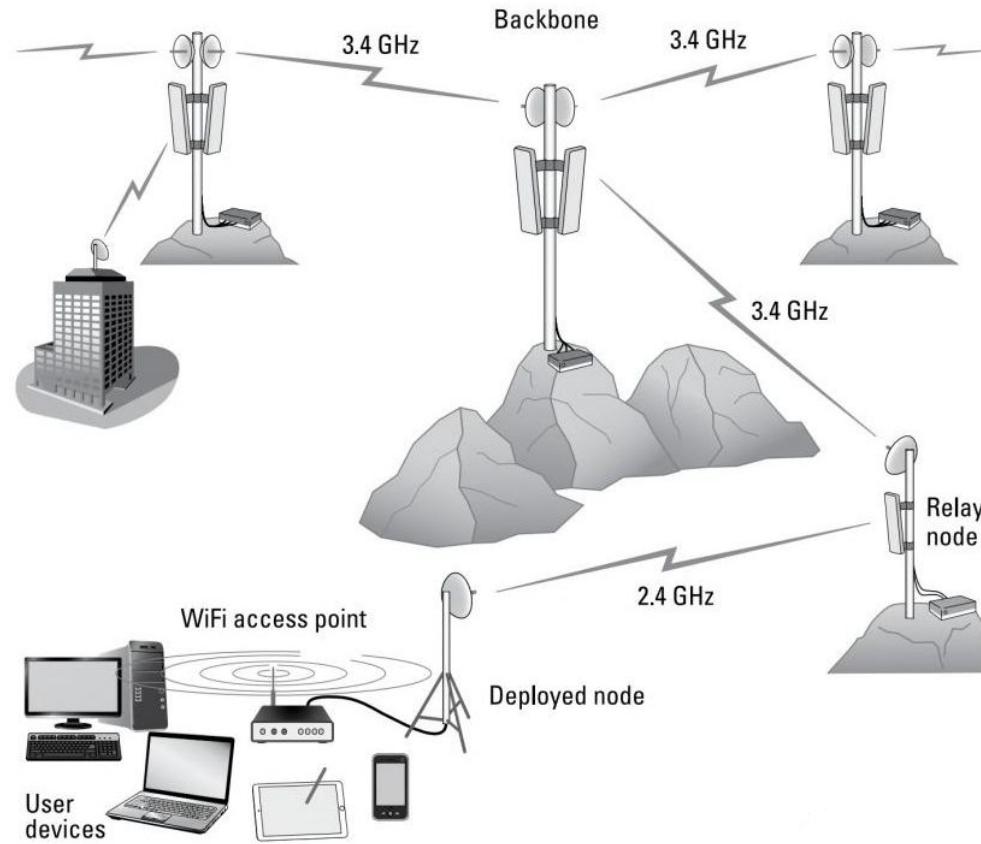
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- APRS (Automatic Packet Reporting System)
- AREDN (Amateur Radio Emergency Data Network)



# Hedef Sistem Mimarisi

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1981'de kullanılmaya başlandı, 2019'da IPv4 kıtlığı nedeni ile bir kısmı satılarak projelere destek sağlandı (44.192.0.0/10 208 milyon dolara satıldı (her IP 47\$))

#### 2021 Grants

Date	Beneficiary	Purpose (click for details)	Amount
2021-11	<a href="#">Olin Satellite + Spectrum Technology &amp; Policy Group (OSSTP)</a>	<a href="#">Addressing Gender and Diversity Imbalances in Engineering</a>	\$671,878
2021-11	<a href="#">Valley yRadio Club of Oregon</a>	<a href="#">Eugene Science Center amateur radio station upgrade</a>	\$16,525
2021-11	<a href="#">OMIK Amateur Radio Association</a>	<a href="#">OMIK Scholarship Fund</a>	\$50,000
2021-10	Walnut Creek SHAMS Amateur Radio Club	<a href="#">Digital emergency communications</a>	\$23,200
2021-10	Mississippi Valley Amateur Radio Association	<a href="#">Emergency communications bus</a>	\$116,399

#### 2019 Grants

Date	Beneficiary	Purpose (click for details)	Amount
2019-09-01	<a href="#">ARISS</a>	<a href="#">Next Generation Radio</a>	\$110,000
2019-08-01	<a href="#">TAPR Inc</a>	<a href="#">Student DCC Attendance Grants</a>	\$10,000

#### 2020 Grants

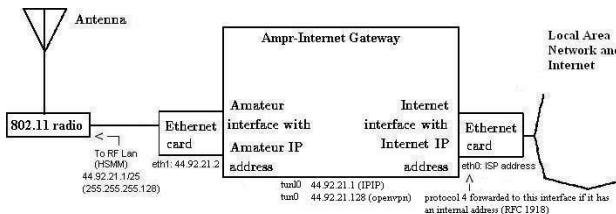
Date	Beneficiary	Purpose (click for details)	Amount
2020-11-24	<a href="#">Foundation for Amateur Radio (FAR)</a>	2021-2022 Scholarships	\$400,000
2020-11-06	Chippewa Valley Amateur Radio Club (CVARC)	<a href="#">Emergency Trailer and Equipment</a>	\$25,165
2020-11-06	<a href="#">University of California San Diego (UCSD)</a>	<a href="#">Automated Capture and Decoding on Modest Wideband SDRs</a>	\$73,836
2020-11-06	<a href="#">San Francisco Wireless Emergency Mesh</a>	<a href="#">Emergency Infrastructure</a>	\$100,000
2020-10-15	<a href="#">Hoopa Valley Tribe</a>	<a href="#">Comprehensive, Community-Owned Communications for Strategy for the Karuk, Yurok, and Hoopa Valley Tribes</a>	\$161,795
2020-09-23	<a href="#">Yurok Tribe</a>	<a href="#">Comprehensive, Community-Owned Communications for Strategy for the Karuk, Yurok, and Hoopa Valley Tribes</a>	\$159,319

# Nedir AMPR-NET, 44'lü IP nasıl yolunu bulur ?

Brian Kantor (WB6CYT)

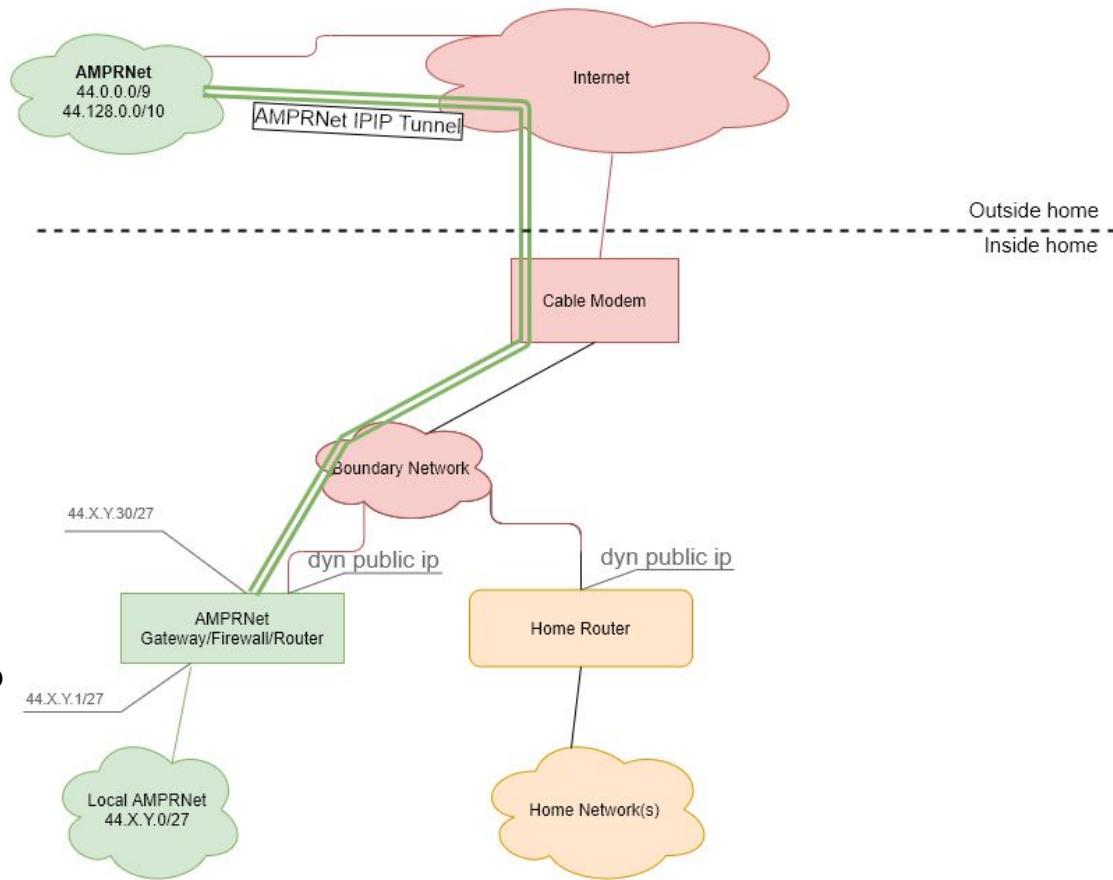
Phil Karn (KA9Q)

James Miller (G3RUH)



raspberryPI, PC  
openWRT, ddWRT, Mikrotik, Ubiquiti, Cisco

AMPR-RIPD veya RIP44D



<https://wiki.ampr.org/>

<https://portal.ampr.org/>

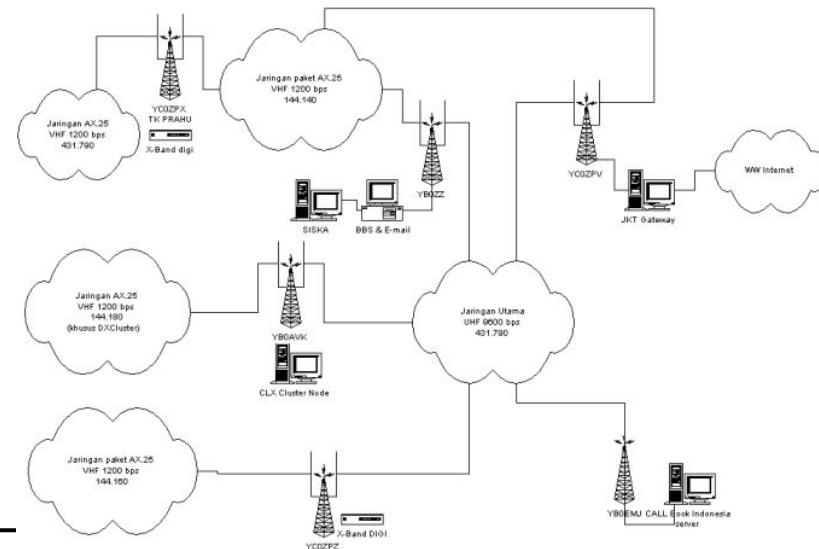
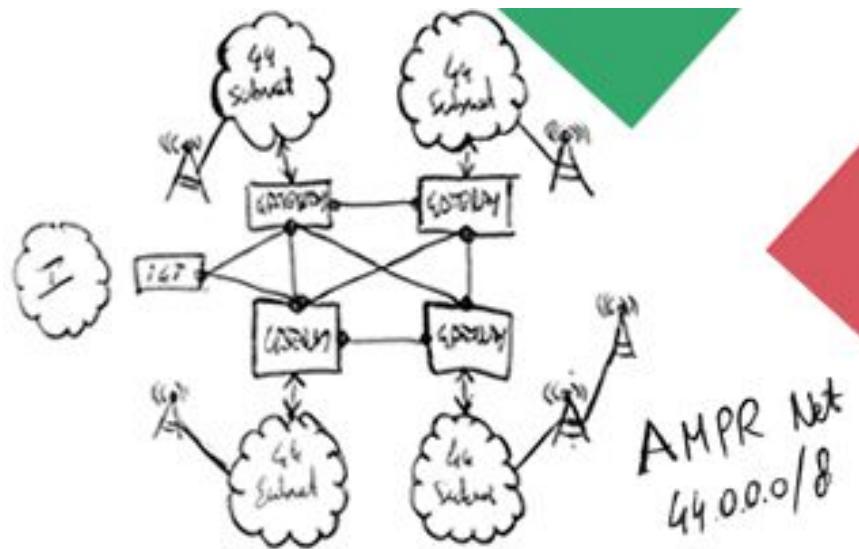
## How to connect to AMPRNet

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- Instructions for [setting up a Linux gateway](#)
  - Instructions for [setting up an OpenBSD gateway](#)
  - Instructions for [setting up a gateway on Cisco Routers.](#)
  - Instructions for [setting up a gateway on MikroTik Routers.](#)
  - Instructions for [setting up a gateway on OpenWRT.](#)
  - Instructions for [setting up a gateway on Ubiquiti EdgeRouter.](#)
  - Instructions for [setting up a gateway on a VyOS instance.](#)
  - Instructions for [Installing ampr-ripd on a Ubiquiti EdgeRouter or EdgeRouter X.](#)
  - Instructions for [directly announcing your allocation via your Internet Service Provider \(ISP\).](#)
  - Instructions for [Accessing AMPRNet via VPN \(experimental\).](#)
  - **Why can't I just route my AMPRNet allocation directly myself ?**
  - If you already operate a [gateway](#) please ensure you have registered on the [portal](#) and "claimed" your gateway.
  - After your gateway is operational, consider [Firewalls](#) and other best practices
-

# IP adresi ile ne yapabilirim ?

- Sunucu çalıştırabilirsin (<https://www.ta7w.ampr.org> <https://44.176.206.101>)
- Projelerini, istasyonunu interne bağılayabilirisin
- Diğer 44'lü IP adreslerine direk erişebilirsin
- PUBLIC IP kullanarak sayısal role çalıştırabilirsin
- Hiç kopmayan INTERNET'in parçası olabilirsin



# Nasıl 44'lü IP adresi alabilirim ?

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<https://portal.ampr.org/>



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## AMPRNet Portal

You are not logged in

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### Welcome to the AMPRNet Portal

Please login to view the full range of services available. If you do not yet have an account, please register using the link above, access is open to all licenced radio amateurs involved in packet radio throughout the World.

For technical information regarding getting started on 44-Net, please visit our Wiki at <https://wiki.ampr.org>

One of the most frequently asked questions, is "how do I get an IP address", so here is a link to our wiki that explains the process: [https://wiki.ampr.org/wiki/Requesting\\_a\\_block](https://wiki.ampr.org/wiki/Requesting_a_block)

Thank you to everyone who has contributed to the portal effort.

# Nasıl 44'lü IP adresi alabilirim ?

Network	Country
44.0.0.0 / 8	Global
44.0.0.9 / 16	UNITED STATES
44.127.0.0 / 16	MULTINATIONAL
44.129.0.0 / 16	JAPAN
44.130.0.0 / 16	GERMANY
44.131.0.0 / 16	UNITED KINGDOM
44.132.0.0 / 17	POLAND
44.132.128.0 / 17	SPAIN
44.133.0.0 / 16	SPAIN
44.134.0.0 / 16	ITALY
44.135.0.0 / 16	CANADA
44.136.0.0 / 16	AUSTRALIA
44.137.0.0 / 16	NETHERLANDS
44.138.0.0 / 16	ISRAEL
44.139.0.0 / 16	FINLAND
44.140.0.0 / 16	SWEDEN
44.141.0.0 / 16	NORWAY
44.142.0.0 / 16	SWITZERLAND
44.143.0.0 / 16	AUSTRIA
44.144.0.0 / 16	BELGIUM
44.145.0.0 / 16	DENMARK
44.146.0.0 / 16	PHILIPPINES
44.147.0.0 / 16	NEW ZEALAND
44.148.0.0 / 16	HAMNET
44.150.0.0 / 16	SLOVENIA
44.151.0.0 / 16	FRANCE
44.152.0.0 / 20	VENEZUELA, BOLIVARIAN REPUBLIC OF ARGENTINA
44.153.0.0 / 16	GREECE
44.155.0.0 / 16	IRELAND
44.156.0.0 / 16	HUNGARY
44.157.0.0 / 16	CHILE
44.158.0.0 / 16	PORTUGAL
44.159.32.0 / 20	THAILAND
44.159.64.0 / 20	VET NAM
44.159.64.0 / 20	CHINA
44.159.80.0 / 20	HONG KONG
44.159.96.0 / 20	KOREA, REPUBLIC OF
44.160.0.0 / 16	HAMNET
44.161.0.0 / 16	LUXEMBOURG
44.162.0.0 / 16	HAMNET
44.163.32.0 / 20	COSTA RICA
44.163.112.0 / 20	BELIZE
44.163.128.0 / 22	CURA?AO
44.163.132.0 / 22	ARUBA
44.163.136.0 / 22	SINT MAARTEN (DUTCH PART)
44.163.140.0 / 22	BONAIRE, SINT EUSTATIUS AND SABA
44.163.144.0 / 20	CURA?AO
44.164.12.0 / 22	MOSambique
44.164.64.0 / 16	DOMINICAN REPUBLIC
44.164.64.0 / 22	TRINIDAD AND TOBAGO
44.164.140.0 / 22	BERMUDA
44.165.0.0 / 16	POLAND
44.167.0.0 / 20	INDIA
44.168.0.0 / 16	FRANCE
44.169.0.0 / 16	HAMNET
44.170.0.0 / 16	HAMNET
44.171.16.0 / 20	COLOMBIA
44.172.16.0 / 20	MALAYSIA
44.172.32.0 / 20	INDONESIA
44.173.0.0 / 16	MEXICO
44.174.0.0 / 16	BRAZIL
44.175.0.0 / 20	UNITED ARAB EMIRATES
44.176.0.0 / 16	TURKEY
44.178.0.0 / 16	ARMENIAN REPUBLIC
44.178.0.0 / 16	RUSSIAN FEDERATION
44.180.0.0 / 20	SERBIA
44.180.16.0 / 20	LITHUANIA
44.181.0.0 / 17	SLOVAKIA
44.182.0.0 / 16	ROMANIA
44.184.128.0 / 17	CANADA
44.185.0.0 / 16	BULGARIA
44.186.0.0 / 15	PAN EUROPEAN
44.188.0.0 / 20	ARMENIA
44.188.192.0 / 20	UKRAINE
44.190.0.0 / 16	NO COUNTRY
44.224.0.0 / 15	GERMANY

Network	Description
44.0.0.1 / 32	AMPRGW
44.1.0.0 / 16	ARDC Infrastructure
44.2.0.0 / 16	California, Central & Northern, etc
44.3.0.0 / 17	Italy CISAR
44.4.0.0 / 16	San Francisco/Silicon Valley
44.5.0.0 / 16	SWEDEN
44.6.0.0 / 16	California-Santa Barbara/Ventura
44.7.0.0 / 20	France BGP
44.8.0.0 / 16	California, San Diego
44.9.0.0 / 16	California-Orange County
44.10.0.0 / 16	Washington,Idaho
44.11.0.0 / 16	Hawaii & Pacific Islands
44.16.0.0 / 16	Los Angeles
44.17.0.0 / 16	California: Antelope / Kern County
44.18.0.0 / 16	Calf. San Bruno & Riveside
44.20.0.0 / 16	Colorado
44.22.0.0 / 16	Alaska
44.24.0.0 / 16	Western Washington
44.25.0.0 / 16	HamWAN
44.26.0.0 / 16	Oregon
44.30.0.0 / 16	New Mexico
44.31.0.0 / 16	BGP Allocations
44.32.0.0 / 16	Southern Colorado
44.34.0.0 / 16	Tennessee
44.36.0.0 / 16	Georgia
44.38.0.0 / 16	South Carolina
44.40.0.0 / 16	Utah
44.42.0.0 / 16	Mississippi
44.44.0.0 / 16	Massachusetts
44.46.0.0 / 16	Missouri
44.48.0.0 / 16	Indiana
44.50.0.0 / 16	Iowa
44.52.0.0 / 16	New Hampshire
44.54.0.0 / 16	Vermont
44.56.0.0 / 16	Pennsylvania
44.58.0.0 / 16	West Virginia
44.60.0.0 / 16	Maryland
44.61.0.0 / 16	Allocation for experimenting & research
44.62.0.0 / 16	Virginia
44.63.0.0 / 16	IPIP Mesh Allocations
44.64.0.0 / 16	New Jersey
44.66.0.0 / 16	Delaware
44.68.0.0 / 16	New York State
44.70.0.0 / 16	Ohio
44.72.0.0 / 16	Illinois
44.73.0.0 / 16	Deprecated
44.74.0.0 / 16	North Carolina
44.76.0.0 / 16	Texas
44.78.0.0 / 16	Oklahoma
44.82.0.0 / 16	Montana
44.88.0.0 / 16	Connecticut
44.90.0.0 / 16	Nebraska
44.92.0.0 / 16	Wisconsin
44.94.0.0 / 16	Minnesota
44.98.0.0 / 16	Florida
44.100.0.0 / 16	Alabama
44.102.0.0 / 16	Michigan
44.103.0.0 / 16	Michigan(2)
44.104.0.0 / 16	Rhode Island
44.106.0.0 / 16	Kentucky
44.108.0.0 / 16	Louisiana
44.110.0.0 / 16	Arkansas
44.114.0.0 / 16	N.S Dakota
44.116.0.0 / 16	Oregon: PDX Metro
44.118.0.0 / 16	Maine
44.122.0.0 / 16	Kansas
44.124.0.0 / 16	Arizona
44.125.0.0 / 16	Nevada
44.126.0.0 / 16	Puerto Rico
44.127.0.0 / 16	Multinational

Network	Description
44.2.0.2 / 32	Nevada County, CA
44.2.0.3 / 32	Plumas County, CA
44.2.0.4 / 32	Mendocino County, CA
44.2.0.133 / 32	Placer County, CA
44.2.1.0 / 27	Mendocino County, CA
44.2.1.64 / 26	Mendocino County, CA
44.2.2.0 / 24	Sonoma County, CA
44.2.6.0 / 24	Siskiyou County, CA
44.2.7.8 / 29	Sacramento County, CA
44.2.7.24 / 29	Sacramento County, CA
44.2.10.0 / 29	Tulare County, CA
44.2.11.0 / 31	El Dorado County, CA
44.2.11.8 / 29	El Dorado County, CA
44.2.12.0 / 24	Yolo County, CA
44.2.14.0 / 29	Nevada County, CA
44.2.14.64 / 28	Nevada County, CA
44.2.15.32 / 28	Placer County, CA
44.2.16.0 / 24	Shasta County, CA
44.2.18.0 / 24	Sonoma County, CA (AS42615)
44.2.19.0 / 30	Yolo County, CA
44.2.50.0 / 29	Shasta County, CA
44.2.50.8 / 29	Shasta County, CA

Network	Description
44.2.6.0 / 29	NR6J Mount Shasta
44.2.6.8 / 29	KI6WJP Mount Shasta
44.2.6.131 / 32	W6BML Club House MSARC

Network	Description
44.176.33.100 / 30	TA5RSA - MERSIN (33)
44.176.206.0 / 24	AMPR GW of TA7W

# Nasıl 44'lü IP adresi alabilirim ?



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AN

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## Request a login

In order to access the portal, you first need to create an account. The first step on the form below. When you submit the form, the system will send you an email address, please follow the instructions provided in the email in order to continue. We strongly advise that you add our email address postmaster@ardc.net to your contacts. This will ensure that our emails are not blocked by your anti-spam software.

### Required details

Callsign:

Username:

Password:

First name:

Surname:

Email:

Organisation:

Grid square:

Country:  Please select your country

Enter number:



I agree:  To the [Terms and Conditions](#)

[Register](#)



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## Login to the AMPRNet portal

Username:

Password:

If you have forgotten your login details, please [click here to reset your password](#).

If you do not have an account here yet, please [click here to register](#).

This portal allows amateur radio enthusiasts utilising the AMPRNet to register their details. If you use the AMPRNet and do not yet have an account, you should register one now.

# Nasıl 44'lü IP adresi alabilirim ?

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AMPRNet

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AM

Home Gateways Coordinators Logout

Home List Manage Options Robot

User: Gateways: Manage gateways

Add a new gateway

---

Title:

Encap type:  IPIP

Gateway hostname:

Gateway IP:

Notes:

Add

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

 Search

Amateur Radio Emergency Data Network

Login | Register

<https://www.arednmesh.org/>

HOME SOFTWARE DOCS FORUM MAP ABOUT US CODE SHOP DONATE

AREDN Offers 2 Non-Shared Channels on 2.4 GHz

2.4 GHz	Channel	-2	-1	0*	1	2	3	4	5	6
Status	Ham Band			Shared Ham and ISM/WiFi Band						
	Freq	2.397	2.402	2.407	2.412	2.417	2.422	2.427	2.432	2.437

\*Not available for use

24 Non-Shared Channels on 3.4 GHz

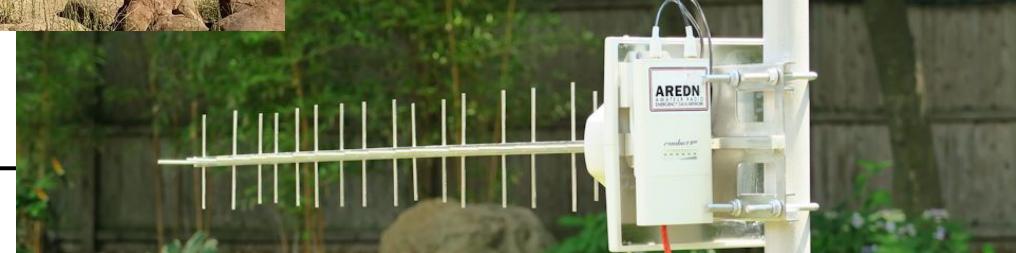
3.4 GHz	Channel	76	77	78	79	80	81	82	83	84	85	86	87
Status	Ham Band												
Freq	3.380	3.385	3.390	3.395	3.400	3.405	3.410	3.415	3.420	3.425	3.430	3.435	
	3.440	3.445	3.450	3.455	3.460	3.465	3.470	3.475	3.480	3.485	3.490	3.495	

54 Channels, 14 unshared on 5.8 GHz

5.8 GHz	Channel	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148
Ham Band shared with U-NII-2C/wifi/unlicensed																			
Sharing	Freq	5.655	5.660	5.665	5.670	5.675	5.680	5.685	5.690	5.695	5.700	5.705	5.710	5.715	5.720	5.725	5.730	5.735	5.740
Ham Band shared with U-NII-3/wifi/unlicensed																			
	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	
Ham Band shared with U-NII-3/wifi/unlicensed																			
	5.745	5.750	5.755	5.760	5.765	5.770	5.775	5.780	5.785	5.790	5.795	5.800	5.805	5.810	5.815	5.820	5.825	5.830	
Ham Band																			
	5.835	5.840	5.845	5.850	5.855	5.860	5.865	5.870	5.875	5.880	5.885	5.890	5.895	5.900	5.905	5.910	5.915	5.920	

Refer to your local band plan for coordination

# Yüksek Hızlı AMPR-NET Kurmak - AREDN



# Yüksek Hızlı AMPR-NET Kurmak - AREDN



# Yüksek Hızlı AMPR-NET Kurmak - AREDN

AREDN® firmware

OpenWRT (Open Wireless Router)

OLSR (Optimized Link State Routing protocol)

Current As of AREDN™ 3.21.4.0 (updated on 07/12/2021)				
Manufacturer/Model	Band			
	900Mhz	2.4Ghz	3Ghz (5)	5.8Ghz
<b>MikroTik</b> ( <a href="http://www.mikrotik.com">www.mikrotik.com</a> )				
LHG (Lite Head Grid)	RBLHG-2nD		RBLHG-5nD	
LHG HP/XL	RBLHG-2nD-XL		RBLHG-5HPnD-XL	
LHG HP			RBLHG-5HPnD	
Basebox	RB912UAG-2HPnD		RB912UAG-5HPnD	
hAP AC Lite (and TC)	RB952U1-Sac2nD		RB952U1-Sac2nD (AP only, no mesh)	
LDF (Lite Dish Feed)	RBLDF-2nD		RBLDF-5nD	
QRT			RB911G-5HPnD-QRT	
SXT	SXTsq-2nD		SXTsq-5nD	
mANTBox	RB911G-2HPnD		SXTsq-5HPnD	
<b>Ubiquiti Networks</b> ( <a href="http://www.ubnt.com">www.ubnt.com</a> )				
AirGrid (XM revision/old)	M2		M5	
AirGrid (XW)			AG-HP-5Gxx	
AirRouter	M2			
AirRouter HP	M2			
Bullet	M2		M5	
Bullet Titanium	M2		M5	
Bullet (XW)	M2			
LiteBeam			M5	
NanoBeam (XW)	NBE-M2-13		NBE-M5-16/19	
NanoBridge	M9	2G18	<b>M3</b>	5G22/5G25
NanoStation Loco (XM)	M9	M2		M5
NanoStation Loco (XW)	<b>M2</b>			M5
NanoStation (XM)	M2		<b>M3</b>	M5
NanoStation (XW)	M2			M5
PicoStation	M2			
PowerBeam (3)	PBE-M2-400		PBE-M5-300 400 400ISO	
PowerBeam			PBE-M5-620	
PowerBridge			M5	
Rocket (XM)	<b>M900</b>	M2	<b>M3 (5)</b>	M5
Rocket (XW)		M2		M5
Rocket Titanium (T1)		M2		M5
Rocket Titanium (XW) (4)				<b>M5</b>
<b>TP-Link</b> ( <a href="http://www.tp-link.com">www.tp-link.com</a> )				
CPE (v1.0)	CPE210		CPE510/CPE520	
CPE (v1.1)	CPE210		CPE510	
CPE (v2.0)	CPE210		CPE510	
CPE210 (v3.0)	CPE210			
CPE220 (v2.0 and v3.0)	CPE220			
CPE610			<b>CPE610</b>	
WBS210 (v1.0)	WBS210			
WBS510 (v2)				<b>WBS510</b>
<b>GL-INET</b> ( <a href="http://www.gi-inet.com">www.gi-inet.com</a> )				
AR150	<b>AR150</b>			
AR300M16	AR300M16			
AR750 (Creta)	AR750			
USB150	USB150			

integrated dual-polarity MIMO antenna

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

AREDN® firmware

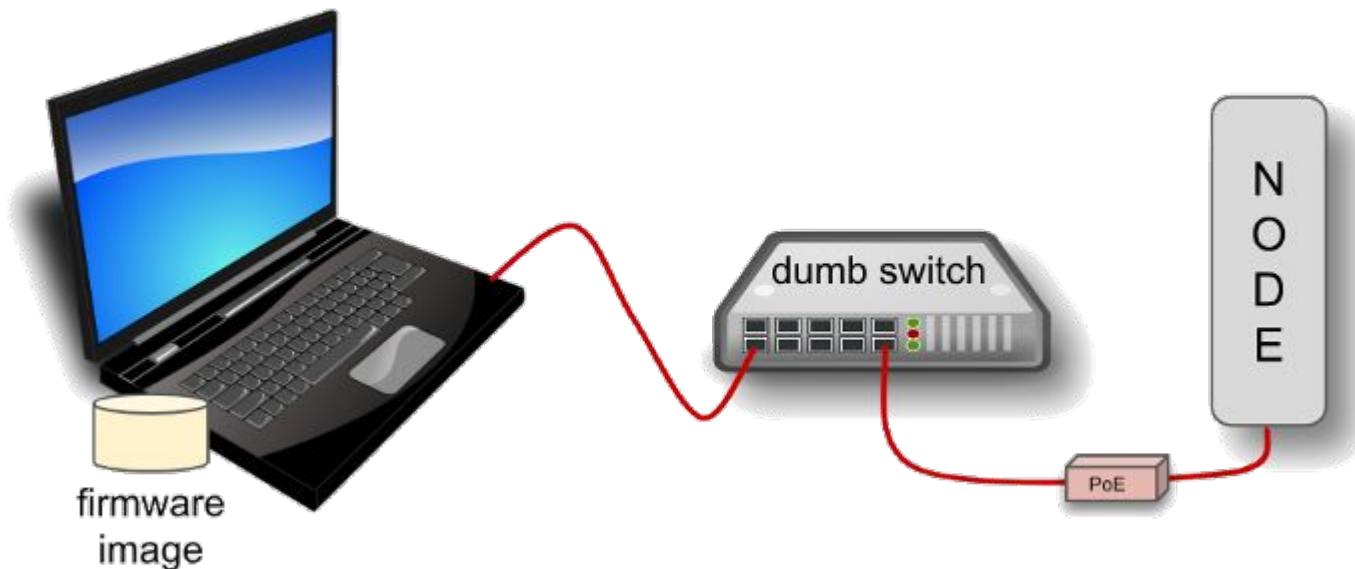
<http://downloads.arednmesh.org/firmware/html/stable.html>

Latest Stable version is: 3.21.4.0		
STEP 1: Find your device/model from this column.	STEP 2: Choose either the FACTORY or SYSUPGRADE file from these columns	
AREDN™ Firmware for Mikrotik	NOT Loading from AREDN UI	Loading from AREDN UI
Basebox 2 (RB912UAG-2HPnD) Basebox 5 (RB912UAG-5HPnD) QRT 5 (RB911G-5HPnD-QRT) mAntbox 2 (RB911G-2HPnD) mAntbox 5 (RB911G-5HPnD)	<a href="#">factory</a> File: aredn-3.21.4.0-ar71xx-mikrotik-vmlinux-intramfs.elf md5sum: 813108b8b9fbe2206e548f7a9369d78c  Size: 9.2M	<a href="#">sysupgrade</a> File: aredn-3.21.4.0-ar71xx-mikrotik-nand-large-sysupgrade.bin md5sum: f719fd1f1036d469004d0ea26f7390b3  Size: 7.0M
hAP AC Lite (952Ui-5ac2nD)	<a href="#">factory</a> File: aredn-3.21.4.0-ar71xx-mikrotik-vmlinux-intramfs.elf md5sum: 813108b8b9fbe2206e548f7a9369d78c  Size: 9.2M	<a href="#">sysupgrade</a> File: aredn-3.21.4.0-ar71xx-mikrotik-rb-nor-flash-16M-ac-sysupgrade.bin md5sum: 18ede0de5a44c625017ffbe2ac7cef98  Size: 6.9M
Lite Head Grid 2 (RBLHG-2nD) Lite Head Grid 5 (RBLHG-5nD) Lite Head Grid 5HP (RBLHG-5HPnD) Lite Head Grid 2XL (RBLHG-2nD-XL) Lite Head Grid 5HPXL (RBLHG-5HPnD-XL) Lite Dish Feed 2 (LDF-2nD) Lite Dish Feed 5 (LDF-5nD) SXTsq 5HP (RBSXTsq-5HPnD) SXTsq 5 (RBSXTsq-5nD) SXTsq 2 (RBSXTsq-2nD)	<a href="#">factory</a> File: aredn-3.21.4.0-ar71xx-mikrotik-vmlinux-intramfs.elf md5sum: 813108b8b9fbe2206e548f7a9369d78c  Size: 9.2M	<a href="#">sysupgrade</a> File: aredn-3.21.4.0-ar71xx-mikrotik-rb-nor-flash-16M-sysupgrade.bin md5sum: 29c4206efad81db26abee77b7f91a71c  Size: 6.9M

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

AREDN® firmware

Setup > Administration > Firmware Update



[https://arednmesh.readthedocs.io/en/latest/arednGettingStarted/installing\\_firmware.html](https://arednmesh.readthedocs.io/en/latest/arednGettingStarted/installing_firmware.html)

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

AREDN® firmware

Setup > Administration > Firmware Update

## AD5BC-Node2

Location: 33.333333 -88.443322  
Ubiquiti Nanostation M2, 60 deg beam width aimed northwest

Help Refresh Mesh Status WiFi Scan Setup Select a theme ▾

WiFi address 10.193.223.199 / 8 Signal/Noise/Ratio -63 / -95 / -32 dB Charts  
LAN address 10.14.254.57 / 29 firmware version 3.21.4.0  
WAN address none  
default gateway none system time Thu Apr 9 2021 13:32:21 MST  
SSID AREDN-5-v3  
Channel -2 uptime 5 days, 22:23  
Bandwidth 5 Mhz load average 0.00, 0.04, 0.06  
free space flash = 8124 KB /tmp = 29972 KB memory = 16424 KB  
OLSR Entries Total = 139 Nodes = 47

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

Location Settings

Latitude

Longitude

Grid Square

Timezone  UTC

Help Save Changes Reset Values Default Values Reboot

Node Name  Password

Node Description (optional)

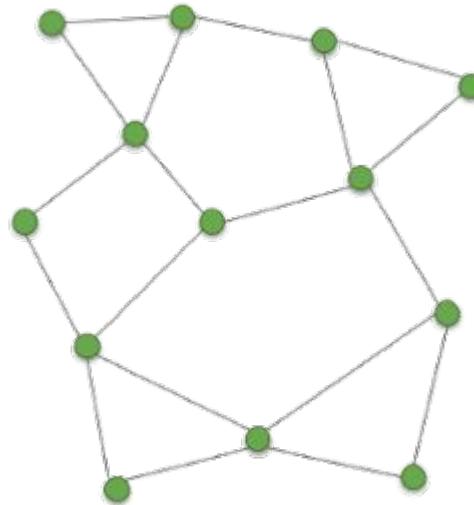
<b>Mesh RF</b> Enable <input checked="" type="checkbox"/> IP Address <input type="text" value="10.22.15.88"/> Netmask <input type="text" value="255.0.0.0"/> SSID <input type="text" value="AREDN"/> -20-v3 Channel <input type="text" value="1 (2412)"/> Channel Width <input type="text" value="20 MHz"/>  Tx Power <input type="text" value="26 dBm"/> 0.00 miles Distance to FARDEST Neighbor 0 kilometers 0 meters <input type="button" value="Apply"/>	<b>LAN</b> LAN Mode <input type="text" value="5 host Direct"/> IP Address <input type="text" value="10.176.122.193"/> Netmask <input type="text" value="255.255.255.248"/> DHCP Server <input checked="" type="checkbox"/> DHCP Start <input type="text" value="194"/> DHCP End <input type="text" value="198"/>  <b>Advanced WAN Access</b> Allow others to use my WAN <input type="checkbox"/> Prevent LAN devices from accessing WAN <input type="checkbox"/>	<b>WAN</b> Protocol <input type="text" value="DHCP"/> DNS 1 <input type="text" value="8.8.8"/> DNS 2 <input type="text" value="8.8.4.4"/>
--	--	--

<b>Mesh RF</b> Enable <input type="checkbox"/> IP Address <input type="text" value="10.22.15.88"/> Netmask <input type="text" value="255.0.0.0"/>  <b>LAN Access Point</b> Enable <input checked="" type="checkbox"/> SSID <input type="text" value="AD5BC-AREDN"/> Channel <input type="text" value="7"/> Encryption <input type="text" value="WPA2 PSK"/> Password <input type="password"/>	<b>LAN</b> LAN Mode <input type="text" value="5 host Direct"/> IP Address <input type="text" value="10.176.122.193"/> Netmask <input type="text" value="255.255.255.248"/> DHCP Server <input checked="" type="checkbox"/> DHCP Start <input type="text" value="194"/> DHCP End <input type="text" value="198"/>
---	--

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

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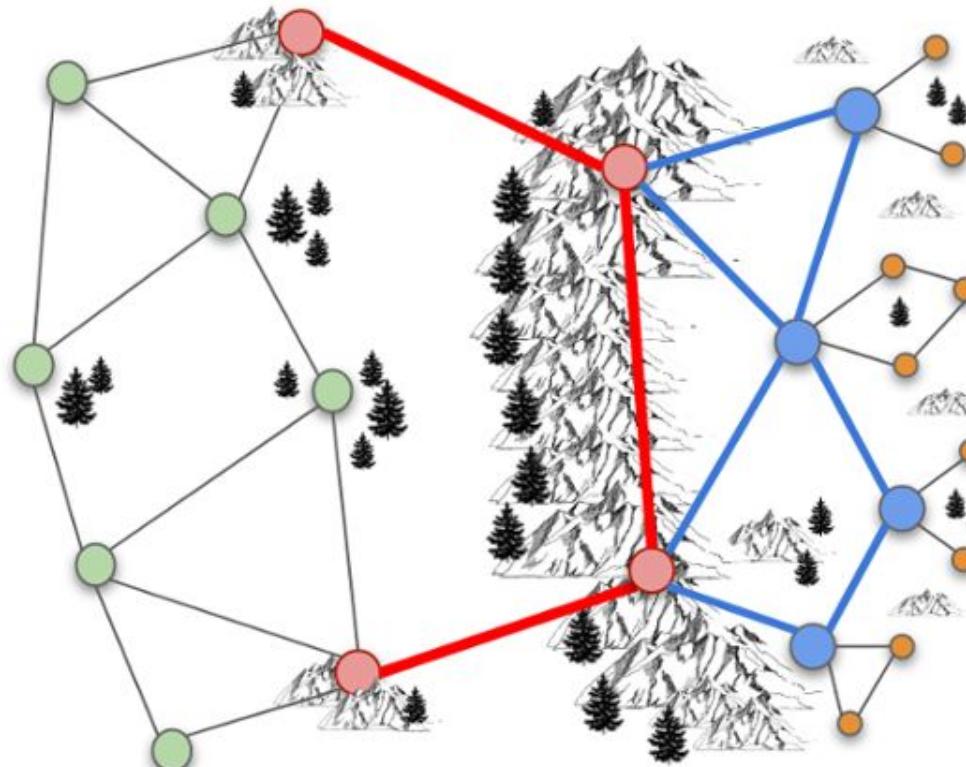
## MESH NETWORK



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# Yüksek Hızlı AMPR-NET Kurmak - AREDN

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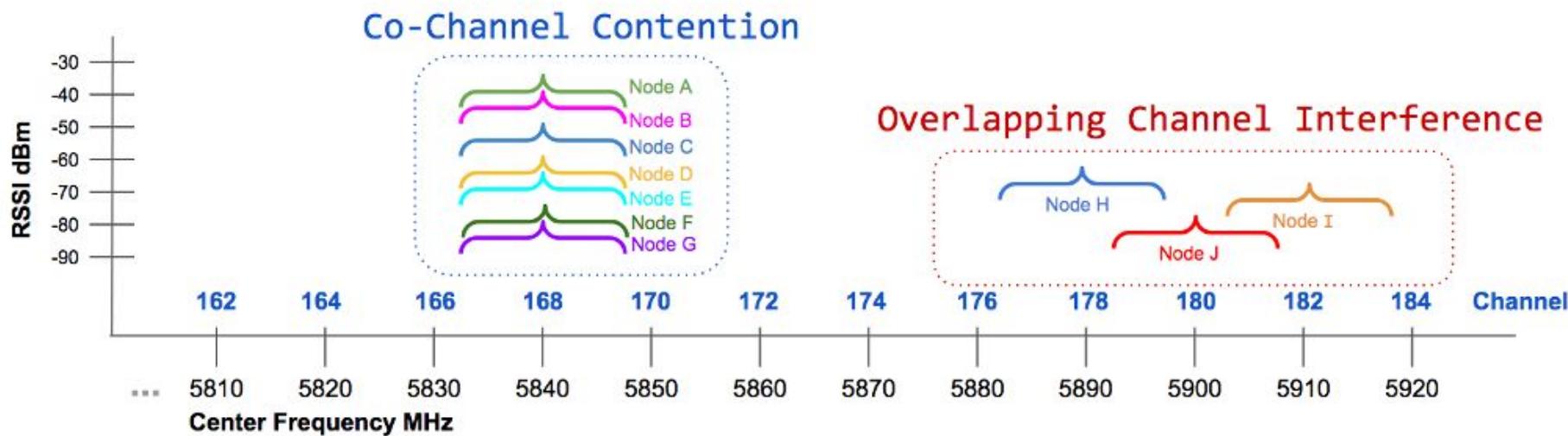
Backbone

Relay

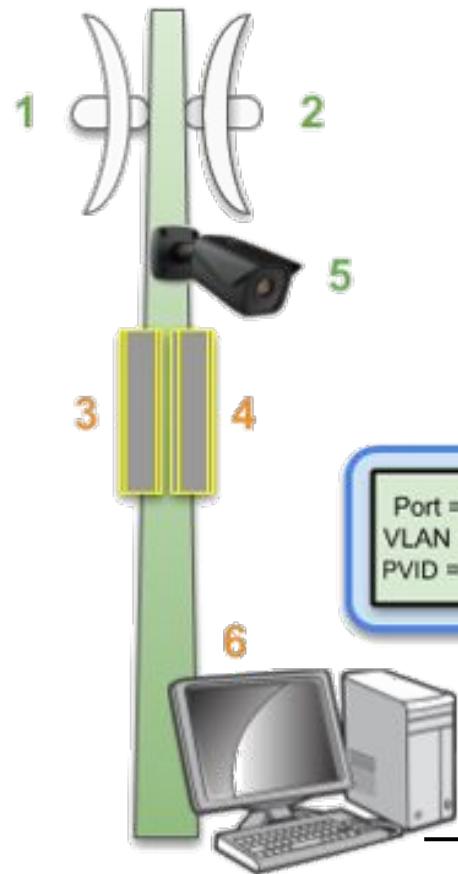
Endpoint

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

## FREKANS PLANLAMA



# Yüksek Hızlı AMPR-NET Kurmak - AREDN



## Traffic Isolation with VLANs

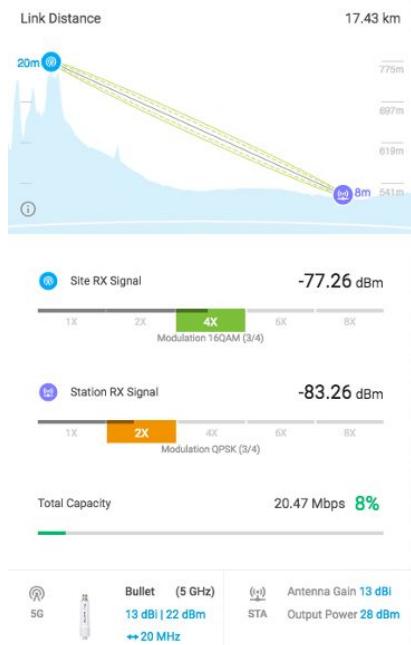
- DtD nodes are still tagged with VLAN 2.
- Switch only sends traffic to certain links:  
Camera to nodes 1 & 2 only,  
Phone system to nodes 3 & 4 only.

VLAN-Capable Switch

# Yüksek Hızlı AMPR-NET Kurmak - AREDN

## LOKASYON SEÇİMLERİ ve RF YAYILIM ANALİZİ

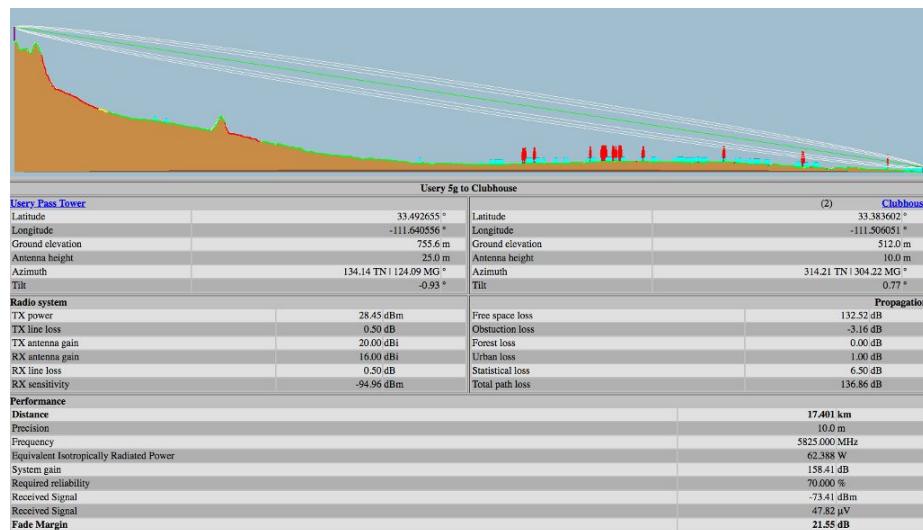
### Ubiquiti AirLink



<http://link.ubnt.com>



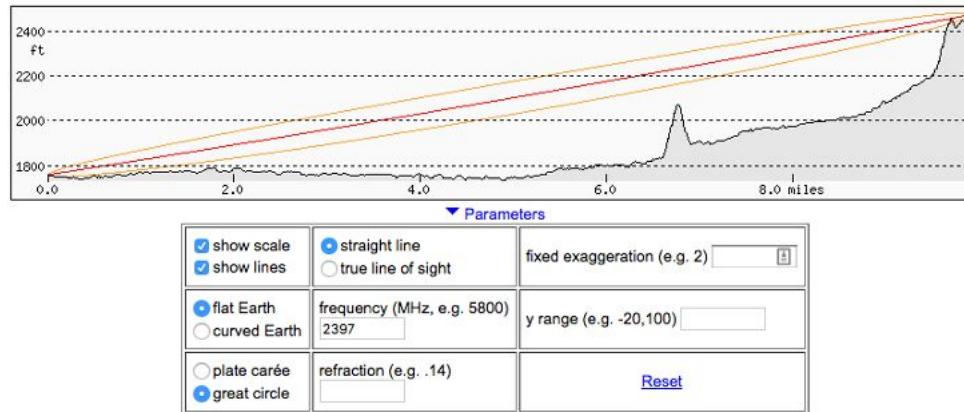
### Radio Mobile



# Yüksek Hızlı AMPR-NET Kurmak - AREDN

## LOKASYON SEÇİMLERİ ve RF YAYILIM ANALİZİ

### HeyWhatsThat Path Profiler



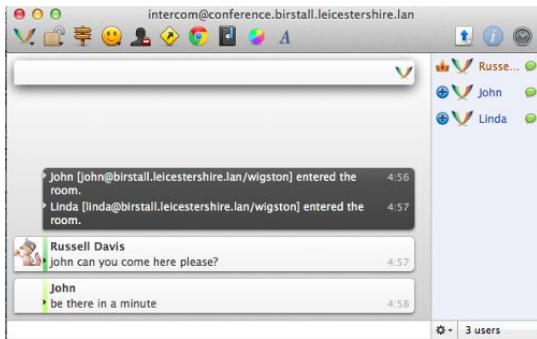
### Radio Fresnel <http://www.radiofresnel.com>



# Internet Bağımsız Programlar

## Chat

- MeshChat
- IRC
- Jabber/XMPP
- Let's Chat
- Mattermost
- Matrix-Synapse



CHAT FILES STATUS LOGOUT

Zone: MeshChat Call Sign: KG6WX C

Node: alibx-2-chatpi Updated: 14 seconds ago

Send a Message

New Message Enter message here

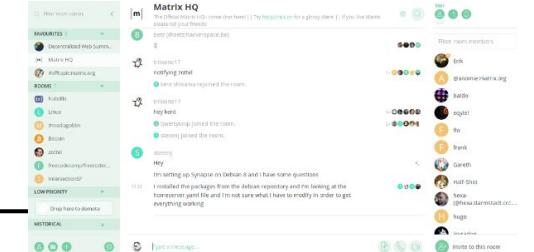
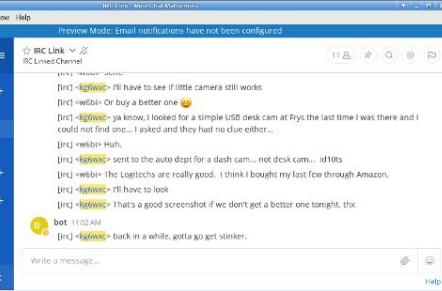
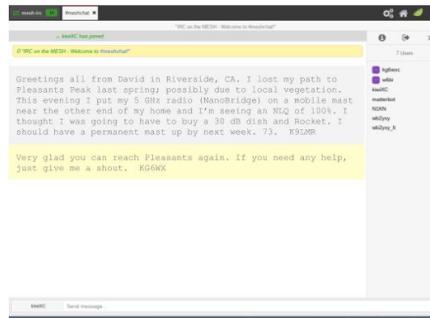
Mesh Chat Users 1

Call Sign	Node	Last Seen
KG6WX C	alibx-2-chatpi	1/23/19 10:20 AM

Channel: Everything

Messages Enter search Everything

Time	Message	Call Sign	Channel	Node
1/16/19 7:13 PM	Greetings all from David in Riverside, CA. I lost my path to Pleasant Peak last spring, possibly due to local vegetation. The reason I have a 5 GHz radio (NanoBridge) on a mobile mast near the other end of my home and I'm seeing an NLQ of 100%. I thought I was going to have to buy a 30 db dish and Rocket. I should have a permanent mast up by next week. 73. -KG6WX	K6LMR	alibx-2-chatpi	



# Internet Bağımsız Programlar

## E-mail

- Citadel/UX
- SMTP
- Winlink

Summary page for kc0euw  
Thursday, 01/24/19

Language: en-US

Messages: 0/0 (None) Today on your calendar: (Nothing)

Tasks: 0/0 (None)

Who's online now:

User name	Room
(not logged in)	
kc0euw	Calendar

About this server:

You're connected to the Citadel Mail, running Citadel 902 with WebCit 902, server build 902 and located in USA. Your system administrator is admin.

Winlink Express 1.5.18.0 - N0DAJ

N0DAJ Settings Message Attachments Move To: Saved Items Delete Open Session: Telnet Post Office Logs

No active session.

System Folders:

- Inbox (0 unread)
- Read items (0)
- Outbox (0)
- Sent items (102)
- Saved items (0)
- Deleted items (0)
- Drafts (0)

Personal Folders:

Global Folders:

Contacts:

Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
2019/01/15 14:15	7H18744CX076	435	K7YCA	K7YCA	WF7DS...	//WL2K Check ins
2019/01/12 13:31	FK3GR1WX0G1F	1155	KF4JBZ	KF4JBZ	N0DAJ	Re: //WL2K Signal
2019/01/08 02:15	C89RRT19KA52	418	K7YCA	K7YCA	WF7DS...	//WL2K Check ins
2019/01/04 13:58	EWW5MS2JK	829	KF4JBZ	KF4JBZ	N0DAJ	Re: //WL2K Signal
2019/01/04 13:58	EWW5MS2JK	187	KF7ANOT	KF7ANOT	None	//WL2K Check ins

Message ID: PL12LA4H3PQM  
Date: 2017/05/16 02:15  
From: K7YCA  
To: WF7DS; NL7FQ; KG7GTZ; KG7ARL; NSIXT; KG7LMI; W6CCD; NBCAV; KYOPA; NTCW; N0DAJ  
Source: K7YCA  
Downloaded-from: RMS:KE7EJF-10  
Subject: //WL2K Check ins

Tonight we only had 11 check-ins, only 2 via HF. I know that quite a few of you are already doing this, but just a reminder about trying other gateways via digipeaters to check in. It exercises your equipment, tests the gateways and increases your familiarity with our Winlink system around the area. Have a great week.

73, Doug  
N0DAJ

# Internet Bağımsız Programlar

- FTP
- WEB
- Doküman Paylaşım ve Ortak Düzenleme (Etherpad)

## VoIP Audio/Video Conferencing

Asterisk Server

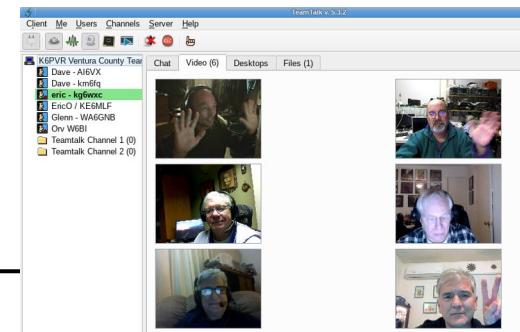
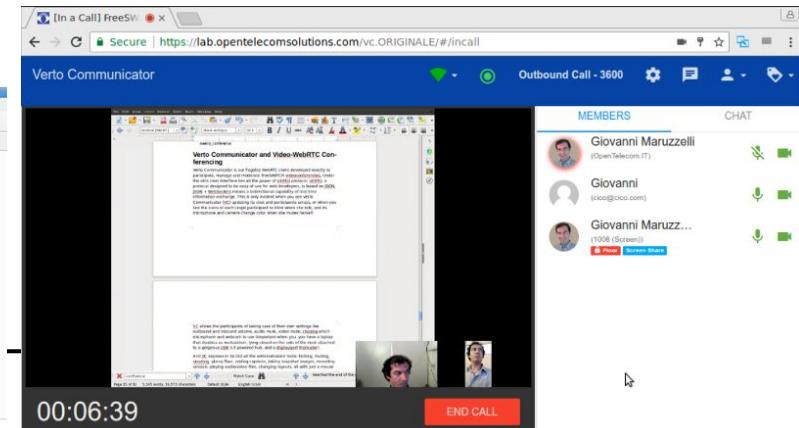
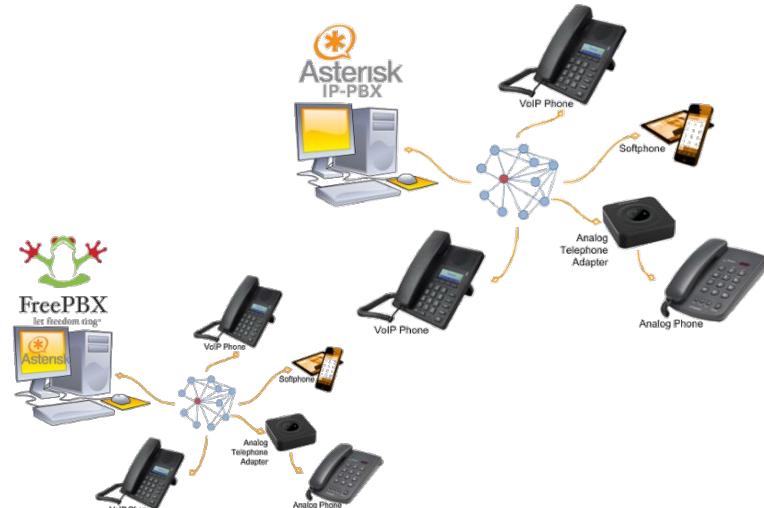
FreePBX Server

Linphone Softphone

Mumble

FreeSWITCH Server

TeamTalk



# Internet Bağımsız Programlar

## Video Streaming and Surveillance

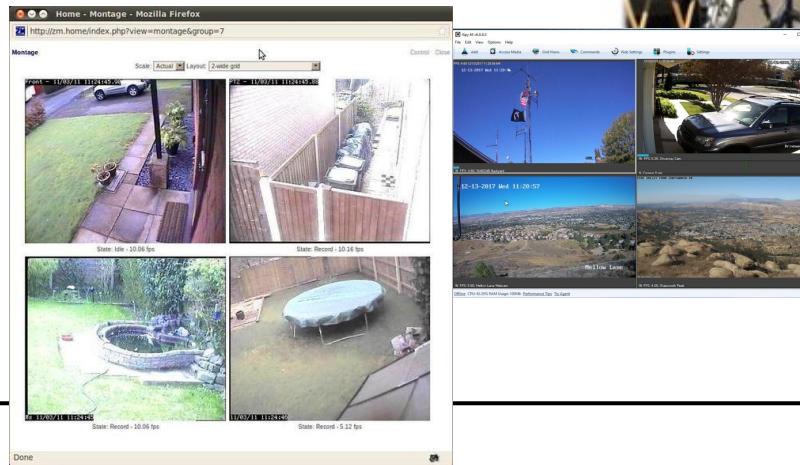
### IP Video Cameras

iSpy

MotionEye

ZoneMinder

Shinobi



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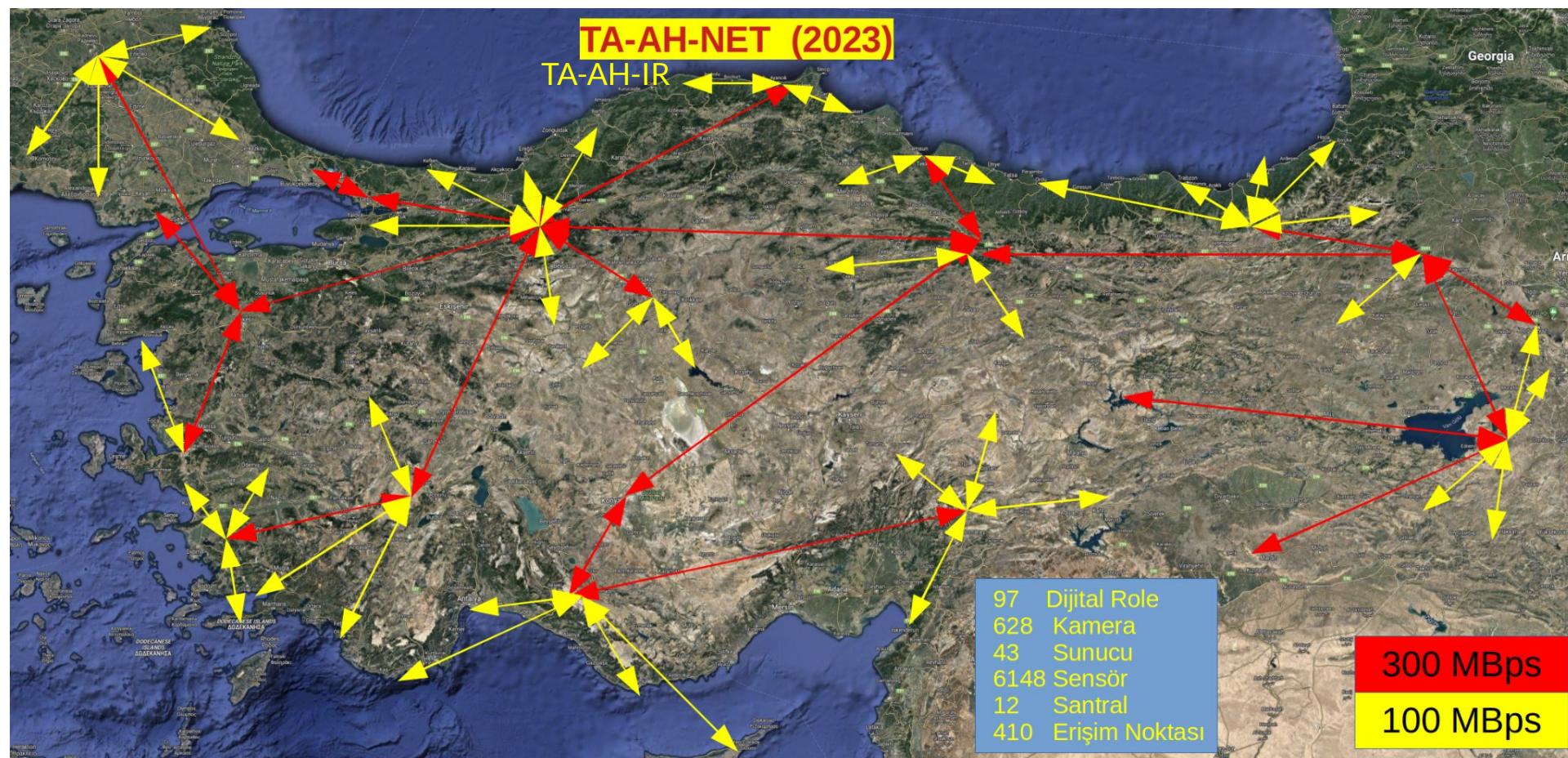
HAYAL  
EDELİM...

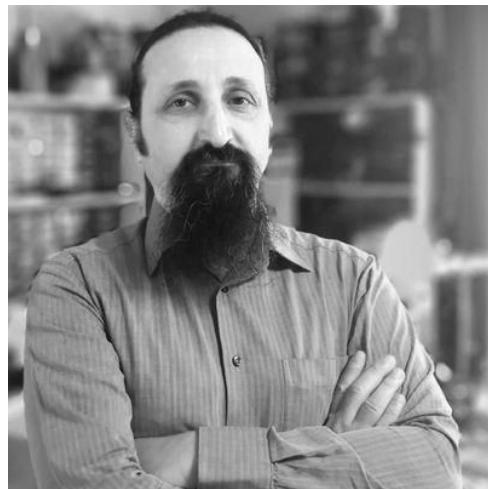
## TA-AH-NET (2023)

TA-AH-IR

97 Dijital Role  
628 Kamera  
43 Sunucu  
6148 Sensör  
12 Santral  
410 Erişim Noktası

300 Mbps  
100 Mbps





**TEŞEKKÜRLER**

**Barış DİNÇ  
TA7W / OH2UDS**

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