



New Jersey State 44 Net / AMPR.ORG IP Subnet Plan

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This plan will describe the subnetting of the IPv4 address range allocated to the amateur radio community in New Jersey. Currently all IPv4 addresses available to New Jersey are co-ordinated by Charles Hargrove, N2NOV. The latest version of this document may be downloaded from http://HamGateNJ.n2nov.net/New_Jersey_State_Subnet_Plan.pdf

The following IPv4 address subnet is allocated to the amateur radio community in New Jersey:

44.64.0.0 / 255.255.0.0

It shall be further broken down into smaller subnets so as to allow all radio hams in the state to be allocated an address that will be geographically relevant and routable. The plan is based on a “hub and spoke” principal. Each county in the state will be allocated its own subnet. A regional hub (or hubs) will be assigned numbers from their subnet and in turn the hubs will issue addresses to their users. The master hub will be called “**hamgatenj**” which will reside on the Internet. The purpose of the hubs will be to control traffic to and from the New Jersey network so as to meet current FCC Part 97 rules and to help prevent unwanted traffic from escaping onto an RF based LAN. HamGateNJ hubs will not prevent RF based users from accessing the Internet should they so wish. Where possible all hubs will be accessible from both the Internet and a local RF LAN. Users may or may not be connected to the Internet, but will be connected via RF to their local hub. The regional hubs will be free to create any RF based LAN they so choose and are strongly encouraged to try experimental data transport methods. Data repeaters such as D-STAR, C4FM, DMR and HamNet (AREDN) are also encouraged to participate in this addressing scheme. The ultimate goal is that of interoperability. All hubs and users on the network will use the “**host.ampr.org**” naming convention. For the purposes of DNS entries, A, AAAA and CNAME records will be allowed and where possible MX records will be populated.

A word about IP and subnets etc:

Most readers will be familiar with expressions such as “subnet”, “netmask” and “gateway” from their exposure to their cable modems at home. However, most users will not understand what these terms mean. In short, the numbers that represent these expressions describe how many IP addresses are available to the local network, how to calculate the location of any IP address and where to go if you cannot reach your intended destination address directly on your LAN.

Just like your cable modem and WiFi router, the ham radio TCP/IP network uses subnets, netmasks and gateways to navigate around hosts for the purposes of sending email, viewing the Dxcluster, etc.

Unlike your equipment at home, when you join the New Jersey ham radio data community you will be issued a set of numbers that will not only allow you to communicate with your fellow hams but also communicate worldwide via the Internet.

Your allocation is indeed an honest-to-goodness “real” IP address. Unlike the IP addresses you are familiar with in your home (192.168.x.x) which are repeated almost everywhere you go, your numbers are unique to you! Like all things in ham radio, the “big boys” want our stuff. There are no more IPv4 addresses available anywhere in the world and so your allocation is a valuable commodity just like your RF space. Use it or lose it!!!! (remember the 220 band in the 1990’s?)

And in case you were wondering, there are PLENTY of numbers for the ham community thanks to the foresight of the original pioneers of packet radio, so please use as many as you can justify. Each of the 21 counties in NJ has over 2,000 addresses available. More is available should the need arise.

In the event that you lose interest in our data community, your numbers will be returned to the pool held for your county and issued to the next requesting user in that county.

It's all in the numbers:

There are a little over 65,500 IP addresses available to New Jersey. Of that number, over 43,000 are shared among the various counties around the state leaving some 22,500 remaining should there be a need to "back fill" somewhere for a special project or for BGP. Should you have a need for more numbers than is available in your county please contact your coordinator to discuss your proposals.

The IP subnet details for a sample county is listed below. These subnets are further reduced to better fit the needs of any given county network between traditional packet messaging systems and experimental uses like VoIP and HSMM/Mesh networks. The 44 Net is understood to be routable packets to other systems by either RF/wireless LANs or the internet via IPIP encapsulation (VPN).

For example:

<u>Bergen County, NJ</u>	44.64.32.1/255.255.248.0
Subnet	44.64.32.0/20
Range	44.64.32.1 – 44.64.39.254 (max. 2,046 hosts)
Network	44.64.32.0
Broadcast	44.64.39.255
Gateway	44.64.32.1
AX25 Hierarchical Address	<i>host.#berg.nj.usa.noam</i>

Each county /21 network can be broken up into two /22 networks like this:

<u>Traditional Packet BBS</u>	44.64.32.1/255.255.252.0
Subnet	44.64.32.0/21
Range	44.64.32.1 – 44.64.35.254 (max. 1,022 hosts)
Network	44.64.32.0
Broadcast	44.64.35.255
Gateway	44.64.32.1

<u>Experimental Uses</u>	44.64.36.1/255.255.252.0
Subnet	44.64.36.0/21
Range	44.64.36.1 – 44.64.39.254 (max. 1,022 hosts)
Network	44.64.36.0
Broadcast	44.64.39.255
Gateway	44.64.36.1

Requestors will then be issued a smaller subnet based on the number of routable addresses needed:

/29	6 usable addresses
/28	14
/27	30
/26	62
/25	126
/24	254

The below chart shows the 21 counties of New Jersey with their associated IP range assignments, the National Weather Service FIPS code for weather radio alerting, the New Jersey county 4 letter code that is used in the AX25 hierarchical addressing template and the 1 to 5 prefixes of USPS Zip Codes in each county for NTS message routing purposes for the NNJ and SNJ ARRL Sections.

<u>County</u>	<u>FIPS</u>	<u>Code</u>	<u>Section</u>	<u>Subnet</u>	<u>Packet</u>	<u>Other</u>	<u>ZIP1</u>	<u>ZIP2</u>	<u>ZIP3</u>	<u>ZIP4</u>	<u>ZIP5</u>
				<u>/21</u>	<u>/22</u>	<u>/22</u>					
SPARE 1			NJ	0	0	4					
SPARE 2			NJ	8	8	12					
SPARE 3			NJ	16	16	20					
SPARE 4			NJ	24	24	28					
BERGEN	34003	BERG	NNJ	32	32	36	070	074	076		
ESSEX	34013	ESSE	NNJ	40	40	44	070	071			
HUDSON	34017	HUDS	NNJ	48	48	52	070	073			
HUNTERDON	34019	HUNT	NNJ	56	56	60	078	085	088		
MIDDLESEX	34023	MIDD	NNJ	64	64	68	070	077	085	088	089
MONMOUTH	34025	MONM	NNJ	72	72	76	077	085	086	087	
MORRIS	34027	MORR	NNJ	80	80	84	070	074	078	079	
PASSAIC	34031	PASS	NNJ	88	88	92	070	074	075		
BGP			NJ	96	96	100					
SOMERSET	34035	SOME	NNJ	104	104	108	070	079	085	088	
BGP			NJ	112	112	116					
SUSSEX	34037	SUSS	NNJ	120	120	124	074	078			
BGP			NJ	128	128	132					
UNION	34039	UNIO	NNJ	136	136	140	070	072	079	088	
WARREN	34041	WARR	NNJ	144	144	148	078	088			
ATLANTIC	34001	ATLA	SNJ	152	152	156	080	082	083	084	088
BURLINGTON	34005	BURL	SNJ	160	160	164	080	082	085	086	087
CAMDEN	34007	CAMD	SNJ	168	168	172	080	081			
CAPE MAY	34009	CAPE	SNJ	176	176	180	082				
CUMBERLAND	34011	CUMB	SNJ	184	184	188	082	083			
GLOUCESTER	34015	GLOU	SNJ	192	192	196	080	083			
MERCER	34021	MERC	SNJ	200	200	204	085	086			
OCEAN	34029	OCEA	SNJ	208	208	212	077	080	085	087	
SALEM	34033	SALE	SNJ	216	216	220	080	083			
BGP			NJ	224	224	228					
BGP			NJ	232	232	236					
BGP			NJ	240	240	244					
BGP			NJ	248	248	252					