



New York 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 the state of New York. Currently all IPv4 addresses available to the state of New York are co-ordinated by Charles Hargrove, N2NOV. The latest version of this document may be downloaded from http://HamGateNY.n2nov.net/New_York_State_Subnet_Plan.pdf

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

44.68.0.0 / 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 “**hamgateny**” which will reside on the Internet. The purpose of the hubs will be to control traffic to and from the New York network so as to meet current FCC Part 97 rules and to help prevent unwanted traffic from escaping onto an RF based LAN. HamGateNY 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 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 York 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 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 62 counties in NY has over 1,000 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 us in New York. Of that number, over 63,000 are shared among the various counties around the state leaving some 2,000 remaining should there be a need to "back fill" somewhere or for a special project. 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>Clinton County, NY</u>	44.68.0.1/255.255.248.0
Subnet	44.68.0.0/22
Range	44.68.0.1 – 44.68.3.254 (max. 1,022 hosts)
Network	44.68.0.0
Broadcast	44.68.3.255
Gateway	44.68.0.1
AX25 Hierarchical Address	<i>host.#clin.ny.usa.noam</i>

Each county /22 network will be broken up into two /23 networks like this:

<u>Traditional Packet BBS</u>	44.68.0.1/255.255.252.0
Subnet	44.68.0.0/23
Range	44.68.0.1 – 44.68.1.254 (max. 510 hosts)
Network	44.68.0.0
Broadcast	44.68.1.255
Gateway	44.68.0.1

<u>Experimental Uses</u>	44.68.2.1/255.255.252.0
Subnet	44.68.2.0/23
Range	44.68.2.1 – 44.68.3.254 (max. 510 hosts)
Network	44.68.2.0
Broadcast	44.68.3.255
Gateway	44.68.2.1

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

/30	2 usable addresses
/29	6
/28	14
/27	30
/26	62
/25	126
/24	254

The below chart shows the 62 counties of NY State with their associated IP range assignments, the National Weather Service FIPS code for weather radio alerting, the NY State county 4 letter code that is used in the AX25 hierarchical addressing template and the 1 to 6 prefixes of USPS Zip Codes in each county for NTS message routing purposes for the four different ARRL Sections in the state.

<u>County</u>	<u>FIPS</u>	<u>Code</u>	<u>Section</u>	<u>Subnet</u> <u>(/22)</u>	<u>Packet</u> <u>(/23)</u>	<u>Other</u> <u>(/23)</u>	<u>ZIP1</u>	<u>ZIP2</u>	<u>ZIP3</u>	<u>ZIP4</u>	<u>ZIP5</u>	<u>ZIP6</u>
Clinton	36019	CLIN	NNY	0	0	2	129					
Essex	36031	ESSE	NNY	4	4	6	128	129				
Franklin	36033	FRAN	NNY	8	8	10	129	136				
Fulton	36035	FULT	NNY	12	12	14	120	121	133	134		
Hamilton	36041	HAMI	NNY	16	16	18	121	128	133	134		
Jefferson	36045	JEFF	NNY	20	20	22	130	136				
Lewis	36049	LEWI	NNY	24	24	26	133	134	136			
Montgomery	36057	MONT	NNY	28	28	30	120	121	133	134		
Schoharie	36095	SCHO	NNY	32	32	34	120	121	124	134		
St. Lawrence	36089	STLA	NNY	36	36	38	129	136				
NYC - Richmond	36085	RICH	NLI	40	40	42	103					
NYC - Queens	36081	QUEE	NLI	44	44	46	111	113	114	116		
NYC - New York	36061	NEWY	NLI	48	48	50	100	101				
NYC - Kings	36047	KING	NLI	52	52	54	112					
NYC - Bronx	36005	BRON	NLI	56	56	58	104					
Nassau	36059	NASS	NLI	60	60	62	110	115	117	118		
Suffolk	36103	SUFF	NLI	64	64	66	005	063	117	119		
Albany	36001	ALBA	ENY	68	68	70	120	121	122	123	124	
Columbia	36021	COLU	ENY	72	72	74	120	121	125			
Dutchess	36027	DUTC	ENY	76	76	78	125	126				
Greene	36039	GREE	ENY	80	80	82	120	121	124			
Orange	36071	ORAN	ENY	84	84	86	109	125				
Putnam	36079	PUTN	ENY	88	88	90	105	125				
Rensselaer	36083	RENS	ENY	92	92	94	120	121				
Rockland	36087	ROCK	ENY	96	96	98	109					
Saratoga	36091	SARA	ENY	100	100	102	120	121	128			
Schenectady	36093	SCHE	ENY	104	104	106	120	121	123			
Sullivan	36105	SULL	ENY	108	108	110	125	127				
Ulster	36111	ULST	ENY	112	112	114	124	125	127			
Warren	36113	WARR	ENY	116	116	118	128					
Washington	36115	WASH	ENY	120	120	122	120	121	128			
Westchester	36119	WEST	ENY	124	124	126	105	106	107	108		
SPARE #1				128	128	130						
SPARE #2				132	132	134						
Allegany	36003	ALLE	WNY	136	136	138	140	145	147	148		
Broome	36007	BROO	WNY	140	140	142	137	138	139			
Cattaraugus	36009	CATT	WNY	144	144	146	140	141	147			
Cayuga	36011	CAYU	WNY	148	148	150	130	131				
Chautauqua	36013	CHAU	WNY	152	152	154	140	141	147			
Chemung	36015	CHEM	WNY	156	156	158	148	149				
Chenango	36017	CHEN	WNY	160	160	162	130	131	133	134	137	138
Cortland	36023	CORT	WNY	164	164	166	130	131	137	138		
Delaware	36025	DELA	WNY	168	168	170	120	121	124	127	137	138
Erie	36029	ERIE	WNY	172	172	174	140	141	142			
Genesee	36037	GENE	WNY	176	176	178	140	141	144	145		
Herkimer	36043	HERK	WNY	180	180	182	133	134	135			
Livingston	36051	LIVI	WNY	184	184	186	144	145	148			

Madison	36053	MADI	WNY	188	188	190	130	131	133	134		
Monroe	36055	MONR	WNY	192	192	194	144	145	146			
Niagara	36063	NIAG	WNY	196	196	198	140	141	143			
Oneida	36065	ONEI	WNY	200	200	202	130	131	133	134	135	
Onondaga	36067	ONON	WNY	204	204	206	130	131	132			
Ontario	36069	ONTA	WNY	208	208	210	144	145				
Orleans	36073	ORLE	WNY	212	212	214	140	141	144	145		
Oswego	36075	OSWE	WNY	216	216	218	130	131	133	134	136	
Otsego	36077	OTSE	WNY	220	220	222	120	121	133	134	137	138
Schuyler	36097	SCHU	WNY	224	224	226	148					
Seneca	36099	SENE	WNY	228	228	230	130	131	144	145	148	
Steuben	36101	STEU	WNY	232	232	234	144	145	148			
Tioga	36107	TIOG	WNY	236	236	238	137	138	148			
Tompkins	36109	TOMP	WNY	240	240	242	130	131	137	138	148	
Wayne	36117	WAYN	WNY	244	244	246	131	144	145			
Wyoming	36121	WYOM	WNY	248	248	250	140	141	144	145		
Yates	36123	YATE	WNY	252	252	254	144	145	148			