INTERNET PROTOCOL t1 and t2 ADDRESS SPACE

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Abstract

Abstract

   This paper Defines the 'IPtX Protocol Specification', and provides a
   visualization of the lack of IP Address Control, a Blunder, which may
   be excused partly because of the impossibility of Predicting the
   Current, as well as the Future use and growth of the Internet.
   However, this requires an investigation, or Analysis for the Current
   use of the HD-Ratio in the IPv4 and IPv6 IP Specifications. Moreover,
   while the IPv4 IP Specification, is indeed the primary focus of this
   investigation. To provide a fair comparison however, this Analysis
   requires, if not mandates, the use of the IPt1 and IPt2 specifications
   as well. The reasoning here nevertheless, is the difference in the
   respective Addressing Schematics. Where by, the Addressing Scheme of the
   former focuses primarily on the HOST IP Address (Assignment), while the
   focus of the latter emphasizes only the Network IP Address. Nevertheless,
   it shall be concluded, the Addressing Methods used in the Schematic also
   affects the Efficiency; 'the RATIO of Total Number of Nodes that can be
   attached to Service the Global Networking Community, and the Number of
   available IP Addresses used for the Connection'.

   In other words, this 'Analysis is Argument', whose focus upon the
   'HD-Ratio' and the 'CIDR Notation' establishes the foundation defining
   the 'INTERNET PROTOCOL t1 and t2 ADDRESS SPACE' for the IPt1 and IPt2
   Protocol Specifications. Which moreover, exceeds the Mandate Defining a
   New IP Addressing System specified as the Requirements outlined in
   RFC1550.

   "This work is Dedicated to my first and only child, 'Yahnay', who is;
    the Mover of Dreams, the Maker of Reality, and the 'Princess of the
    New Universe'. (E.T.)"

Introduction: Analysis and Impact of the IPv4 Internet Protocol
              Address Space, which Questions the Current Use of
              and Application of the 'CIDR Notation'

The mathematical learning curve regarding an understanding of such
concepts as 'Bit Mapping' the 'Network, or Host Portion of an IP Address'
can be long and arduous. And this is seen especially true, when trying to
grasp the 'How-To's' and functional purpose of 'CIDR'. And while I
have read the works from only a few authors whose approach makes a
distinction, as would be a noted difference in the interpretation of
the definition of 'CIDR'. I have noted moreover, their approach is not
a pronounced separation, as would be the unquestionable distinction used
in the 'Water and Oil' analogy from Chemistry. However, the beginner,
would understand quite clearly the difference between the 'Front-End'
and 'Back-End' approaches used in "Supernetting of an IP Address".
Where by the 'Bit Mapping' of the 'Network Portion', would represent
the 'Front-End' approach, and the 'Bit Mapping' of the 'Host Portion'
would represent the 'Back-End' approach, in what is defined, or called
the "Supernetting of an IP Address", or 'CIDR'. Nevertheless, while the
mathematical operation involved in either the 'Front-End' or 'Back-End'
usage of 'CIDR' is not, by itself, confusing or conflicting operations.
Still, a lot remains the Wishful Dream, or on the 'Wish List' of the
hopeful, regarding a greater Specificity in the definition and
distinction of the functional 'Parameters' associated with the conventions
used in the 'CIDR' notation representing a Network IP Address. Needless
to say, this becomes even more evident when trying to understand the
"INTERNET PROTOCOL V4 ADDRESS SPACE", which was developed and used by
IANA as a guide, or scheme, Denoting some Method used to determine IP
Address Availability, Special Assignment, and Allocation.

In other words, TABLE 1, the "IPv4 Internet Protocol Address Space",
according to the current standards and definition of 'CIDR', one would
conclude that there is a great number of IP Addresses wasted on HOST
Assignments. And this is apparent from the 'Bit Map' definition assigned
to the notation "/8". Where in any 32 Bit IP Addressing format, this
'Bit Mapping' notation accounts for (Class A = 126 x 254^3) 2,064,770,064
IP Addresses under the current IPv4 specification, that is, without using
the 'Front-End' indicator, specified number of addresses, from Class A.
And then, when it is used, it would it would account, (again using the
current definitions of 'CIDR') an assignment, or allocation of more than
16 Million IP Address (1 X 245^3). Which, to say the very least, amounts
to IP Address waste, because this has the effect of providing a Host with
Network Status. 'Not to mention that most of the companies, who has such
an arrangement are not "IPS's".

Nevertheless, the Mathematical Problem(s) encompassing these definitions
far out weight the problems associated with IP Address Waste. In other
words, the Current Methods and Definitions of 'CIDR', regarding its use
in 'Bit Mapping' an IP Address, is Mathematically Incorrect. Or just
plain Wrong! In other words, an '8 Bit Mapping' Designation under the
Current '32 Bit IP Specification', can only account for '255' IP
Addresses (And NO more than that!). To be more specific however, what
this means Mathematically, is that, there is only '1' of the '4' '8 Bit
Quadrants' being used, which sets the Parameters for the Total Number of
IP Addresses Assigned. Moreover, the use of only '1' Quadrant, as a means
for specification regarding the total number of IP Addresses assigned, is
an Error. Which can not be used to Account for the 'Diversity in Number',
regarding the Total Number Combinations Derived from the Calculation of
the Total Number of IP Addresses Contained in the IP Address Class.

Unfortunately however, the above argument leads to a mathematical Proof,
which revives an Old Argument regarding the Method of Enumeration using
the Binary Numbering System. In other words, the Total, or Inclusive
Count, which would represent the '8 Bit Mapping' notation, '/8', would
not yield the Binary Number '255'. It would in fact represent '256',
because Zero, under the Current Binary Specification, is indeed a Binary
Number (0000). Furthermore, it should be understood, that this does serve
not only the explanation for the ongoing argument, but the Current
Definition of the Modern Binary System as well. Which is to say, under
the Current, or Modern Binary System, {11111111} = '8 Bits' = '255', does
not follow from the Definition of '2', representing Base, in what is
clearly (Defining the Binary Representation in the 32 Bit Addressing) an
Exponential Equation, represented by the equation, 2^N. In which case,
the Total, or Inclusive Count for an '8 Bit' translation of a Binary
Number representing an Integer, would be given by the equation,
'$2^8 = 256$**'. This moreover, Mathematically implies the equation,
$8^{32} = 256^4$, which would be interpreted as meaning; 'There are '32'
Bits used to represent the '4,294,967,296' Integers, which represents
the Total Number of IP Addresses contained in the IPv4 Addressing
Specification. Nevertheless, while the counting methods used in the
Binary System remain in Dispute, an adequate representation for the
'CIDR' Notation can be determined using the Current Binary Methods for
Enumeration. That is, given by TABLE 2, we have:

**Note: In other words; {11111111} = '2 X 2 X 2 X 2 X 2 X 2 X 2 X 2'
        = 256 = 2^8... And this is the Current or Modern Definition
        using the accepted Binary System... So, Why '255'???

```
                       TABLE 1

            IPv4 Internet Protocol Address Space


Address Block     Registry - Purpose                    Date
--------------- ------------------------------------- ------
000/8           IANA - Reserved                       Sep 81
001/8           IANA - Reserved                       Sep 81
002/8           IANA - Reserved                       Sep 81
003/8           General Electric Company              May 94
004/8           Bolt Beranek and Newman Inc.          Dec 92
005/8           IANA - Reserved                       Jul 95
006/8           Army Information Systems Center        Feb 94
007/8           IANA - Reserved                       Apr 95
008/8           Bolt Beranek and Newman Inc.          Dec 92
009/8           IBM                                   Aug 92
010/8           IANA - Private Use                    Jun 95
011/8           DoD Intel Information Systems         May 93
012/8           AT&T Bell Laboratories                Jun 95
013/8           Xerox Corporation                     Sep 91
014/8           IANA - Public Data Network            Jun 91
015/8           Hewlett-Packard Company               Jul 94
016/8           Digital Equipment Corporation         Nov 94
017/8           Apple Computer Inc.                   Jul 92
018/8           MIT                                   Jan 94
019/8           Ford Motor Company                    May 95
020/8           Computer Sciences Corporation         Oct 94
021/8           DDN-RVN                               Jul 91
022/8           Defense Information Systems Agency     May 93
023/8           IANA - Reserved                       Jul 95
024/8           ARIN - Cable Block                    May 01
                   (Formerly IANA - Jul 95)
025/8           Royal Signals and Radar Establishment Jan 95
026/8           Defense Information Systems Agency     May 95
027/8           IANA - Reserved                       Apr 95
028/8           DSI-North                             Jul 92
029/8           Defense Information Systems Agency     Jul 91
030/8           Defense Information Systems Agency     Jul 91
031/8           IANA - Reserved                       Apr 99
032/8           Norsk Informasjonsteknologi           Jun 94
033/8           DLA Systems Automation Center         Jan 91
034/8           Halliburton Company                   Mar 93
035/8           MERIT Computer Network                Apr 94
036/8           IANA - Reserved                       Jul 00
                   (Formerly Stanford University - Apr 93)
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037/8         IANA - Reserved                          Apr 95
038/8         Performance Systems International         Sep 94
039/8         IANA - Reserved                          Apr 95
040/8         Eli Lily and Company                     Jun 94
041/8         IANA - Reserved                          May 95
042/8         IANA - Reserved                          Jul 95
043/8         Japan Inet                               Jan 91
044/8         Amateur Radio Digital Communications     Jul 92
045/8         Interop Show Network                     Jan 95
046/8         Bolt Beranek and Newman Inc.             Dec 92
047/8         Bell-Northern Research                   Jan 91
048/8         Prudential Securities Inc.               May 95
049/8         Joint Technical Command                  May 94
              Returned to IANA                         Mar 98
050/8         Joint Technical Command                  May 94
              Returned to IANA                         Mar 98
051/8         Deparment of Social Security of UK       Aug 94
052/8         E.I. duPont de Nemours and Co., Inc.     Dec 91
053/8         Cap Debis CCS                            Oct 93
054/8         Merck and Co., Inc.                      Mar 92
055/8         Boeing Computer Services                 Apr 95
056/8         U.S. Postal Service                      Jun 94
057/8         SITA                                     May 95
058/8         IANA - Reserved                          Sep 81
059/8         IANA - Reserved                          Sep 81
060/8         IANA - Reserved                          Sep 81
061/8         APNIC - Pacific Rim                      Apr 97
062/8         RIPE NCC - Europe                        Apr 97
063/8         ARIN                                     Apr 97
064/8         ARIN                                     Jul 99
065/8         ARIN                                     Jul 00
066/8         ARIN                                     Jul 00
067/8         ARIN                                     May 01
068/8         ARIN                                     Jun 01
069-079/8     IANA - Reserved                          Sep 81
080/8         RIPE NCC                                 Apr 01
081/8         RIPE NCC                                 Apr 01
082-095/8     IANA - Reserved                          Sep 81
096-126/8     IANA - Reserved                          Sep 81
127/8         IANA - Reserved                          Sep 81
128-191/8     Various Registries                       May 93
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192/8        Various Registries - MultiRegional       May 93
193/8        RIPE NCC - Europe                        May 93
194/8        RIPE NCC - Europe                        May 93
195/8        RIPE NCC - Europe                        May 93
196/8        Various Registries                       May 93
197/8        IANA - Reserved                          May 93
198/8        Various Registries                       May 93
199/8        ARIN - North America                     May 93
200/8        ARIN - Central and South America         May 93
201/8        Reserved - Central and South America     May 93
202/8        APNIC - Pacific Rim                       May 93
203/8        APNIC - Pacific Rim                       May 93
204/8        ARIN - North America                     Mar 94
205/8        ARIN - North America                     Mar 94
206/8        ARIN - North America                     Apr 95
207/8        ARIN - North America                     Nov 95
208/8        ARIN - North America                     Apr 96
209/8        ARIN - North America                     Jun 96
210/8        APNIC - Pacific Rim                       Jun 96
211/8        APNIC - Pacific Rim                       Jun 96
212/8        IPE NCC - Europe                         Oct 97
213/8        RIPE NCC - Europe                        Mar 99
214/8        US-DOD                                   Mar 98
215/8        US-DOD                                   Mar 98
216/8        ARIN - North America                     Apr 98
217/8        RIPE NCC - Europe                        Jun 00
218/8            APNIC - Pacific Rim                   Dec 00
219/8            APNIC                                Sep 01
220/8            APNIC                                Dec 01
221-223/8        IANA - Reserved                      Sep 81
224-239/8    IANA - Multicast                         Sep 81
240-255/8    IANA - Reserved                          Sep 81
```

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                        TABLE 2


              IPv4 'Bit Mapped' IP Address Distribution
           Derived from the Modern Method for Binary Enumeration
                     Using the 'CIDR' Notation

          1                    2            3            4

    Network IP Address     Number of IP    Exponential    Total
      Class Range        Addresses Issued   equation    Number of
      /Starting           /for the Octet    yielding   IP Addresses
       Network             Representing    Total Number    Issued
       Prefix:            the IP Address   IP Addresses
    Number of Bits         Class Range        Issued
         |                     |                |           |
         V                     V                V           V
    "/New 'CIDR'
      Notation"


                          CLASS A


      0-126/00:08    =       0/8       =      2^0    =       1

      0-126/00:08    =       1/8       =      2^1    =       2

      0-126/00:08    =       2/8       =      2^2    =       4
                             |                |              |
                             V                V              V
      0-126/00:08    =       6/8       =      2^6    =      64
                             |                |              |
                             V                V              V
      0-126/00:08    =       X/8       =      2^X    =     126



    -----------------------------------------------------------

                          CLASS B


      128-191/10:16   =    0/16       =       2^0   =       1

      128-191/10:16   =    1/16       =       2^1   =       2
                             |                  |            |
                             V                  V            V
      128-191/10:16   =    X/16       =       2^X   =    16,256

    -----------------------------------------------------------
```

```
                              CLASS C


      192-223/110:24   =     0/24     =       2^0  =       1

      192-223/110:24   =     1/24     =       2^1  =       2
                              |                    |            |
                              V                    V            V
      192-223/110:24   =     X/24     =       2^X  =  2,064,512
```

Nevertheless, while Table 2 provides a better description and use of the
'CIDR' notation, it falls extricably short from the full exploitation, and
the actual representation regarding the True Value of 'CIDR'. In other
words, the real Value for the use of 'CIDR', would be seen to take
advantage of the Total Number of IP Addresses contained in the IPv4
specification, and not just the limited number of IP Addresses contained
in 'Class C'. Where by, it should be very clear, that while Table 1 does
provide an easily discernable explanation of the IP Addresses Allocated.
Now. It also shows the IP Address waste, because it does nothing to change,
nor fix the Loss of more than 16 Million IP Addresses, for every IP Address
issued, which represents the Number IP Addresses wasted on HOST Address
assignment. Nonetheless, Re-Defining the CIDR' Notation as depicting the
'Network Prefix' and the 'Bit Range it Uses', as used in Table 2, under
column '1', does indeed provide the necessary foundation for its full
exploitation, and establishes a smooth Transition, which is required by
the 'IPtX IP Addressing Specification' (See Chapter II). Needless to
say, this method clearly follows from the definition of 'CIDR', and builds
upon the existing foundation, which was logically derived and used in the
IPv4 specification.

Chapter I: Analysis IPv4, IPt1, and IPt2 address space using
          the HD-Ratio

     As shown in RFC1715, and RFC3194, the HD-ratio proved to be a Dismal
     Failure for use as an indicator to determine IP Address use and
     Distribution Efficiencies. In fact, it can easily be concluded that the
     IPt1 and IPt2 IP Specification are the only Addressing Protocols which
     meet the All of the Requirements outlined in RFC1550, especially since,
     they were Logically Derived from the IPv4 IP Specification. In other
     words, the IPt1 and IPt2 Protocol Specifications not only meet the
     Transitional requirements, as would be viewed as meeting all of the
     Engineering considerations required under RFC1550, but it also offers
     a more Gradual, and yet Infinite Expansion Possibilities, to meet the
     challenge that only the Colonization of the Universe could provide.

     Needless to say, when examining the benefits of using the HD-Ratio, one
     would discover, that is has absolutely No application regarding the
     determination of the Efficiency Rating for the IPv4, IPv6, and especially
     not the IPt1 and IPt2 Addressing Protocol Specification(s), because these
     protocols makes use of more than 99.999+% of the IP Addresses contained in
     this Addressing System. And while some of the additional protocol
     definitions and specifications, which increased the benefits of the IPv4
     foundation, has been remarked, or viewed as being unnecessary Growing
     Pains. These remarks should not be considered as being anything but
     unintelligent babblings. As an example, the use of 'CIDR', while not fully
     exploited, follows logically, from the foundation of the IPv4
     Specification, and paved the way for the Mathematical and Logical
     derivation of a 2 New IP Addressing Systems. These Specifications moreover,
     Completely exploit the Solid Foundation provided by the IPv4
     Specification. In other words, at best, the H-Ratio, Unlike the HD-Ratio,
     is a Beguilement, whose only purpose is to deceive, because surely the
     Logarithmic Equation described in RFC1715 could not serve any vital
     purpose. In which case, the author would have been better off using the
     elementary method for calculating the actual Efficiency Rating (see
     Eq. 1). Because taking the Log to the Base 10, using this equation, would
     not have derived any practical meaning, at least not one which could be
     translated into some actuate determination for some Efficiency Rating
     regarding the IP Addressing Systems. And this becomes even more apparent,
     when it is realized that the Number of Bits used to represent an IP
     Address does not account for the Total Number of IP Addresses available
     in the IP Addressing System.

```
                              Eq. 1

                    log (number of objects)
              H = -----------------------
                         available bits
```

Furthermore, while RFC3194 provides a more actuate Logarithmic Equation
for Efficiency Determination, HD-Ratio, its usage would be more applicable
in a Current Use scenario (See Eq. 2). This becomes even more apparent
when it is realized that the 'Numerator' used in the equation 'can'
represent a 'Constant', or Specified Value, and not the result derived from
some 'Sampling Related to a Statistical Analyses of the World's Population
Growth or Decline Patterns.

```
                              Eq. 2


                   log(number of allocated objects)
            HD = -----------------------------------------
                 log(maximum number of allocatable objects)
```

Even still, suppose for a moment that Eq. 2 were a valid representation
for the determination of the Efficiency Rating for an IP Addressing System.
And suppose even further, that a test was needed to determine the value of
the IPt1 Addressing Specification, then the results from the Calculations
using this equation would be 'Startling', because the 'HD-Ratio' would
approach NEARLY a VALUE of '1'. This is because all of the available IP
Addresses, which are available in this IP Addressing Specification are
used for Network Assignment, the point of 'Demarcation', that excludes
the use of a viable Network IP Address for Host Address Assignment. Which
also emphasizes the point regarding its functional use; Analysis of the
Percentage of Network Addresses vs. Host, or Nodes Connected vs. Number of
Available IP Addresses used for the Connection. And if you would note Table
3, and the Currently Acceptable IP Network Addressing Practices, then it
would be realized, that the Entire World could Actually be Networked using
only Section 'A-1' from Class A of IPt1 IP Addressing Specification.

Furthermore, since the Prefixes used in the IPt2 IP Protocol Specification
can not be used in any calculation, which would be required for the
Determination of the Efficiency Rating regarding the use of the Total
Number of IP Address. Then their use within the IPt2 Protocol
Specification is indeed an Enhancement, which can only be viewed as a
Magnification Freebie. That is, without question, IPt2 allows a more
Gradual Growth that can quite easily be Expanded to Infinity (See Tables
4 and 5). In which case, Population Growth really does not matter, because
it is now a Variable that has been removed from the Equation.

Nevertheless, while there was some mention of a comparison to other
Addressing Systems, there was No mention regarding the way these Numbering
Systems were used or even Allocated (i.e. The telephony System). In other
words, their mention was pointless, because no clear foundation, that
could be viewed as having establish the Point upon which an Argument
could be based was ever mentioned or shown to exist. In a word; 'I
actually did not understand the point, nor purpose of either RFC1715 nor
RFC3194, because it seems that these RFCs were focused more upon the
Logarithmic Equation, rather than the reported objective regarding the
Efficiency Rating, and the Determination of the most efficient IP
Addressing scheme that should be used. And clearly, if a Viable Network
Connection, Network IP Address, is used for Host Address Assignment, which
is behind the Demarcation Line, then this is a Waste that would affect the
Calculation of Efficiency. Furthermore, while I have read some mention
regarding the 'Address Space Allocation Table(s), it was never pointed out,
that the 'Address Allocation Table' (Or "INTERNET PROTOCOL ADDRESS SPACE")
could quite literally invalidate any calculation regarding efficiency,
because such a TABLE can also be INEFFICIENT.

```
                          Table 3

    "Reality of the Mathematical Addressing Schematic for the
     'IPt1' Addressing System Using the Modern Binary System."
     (Where the Value for the variable 'Y' is given by the Laws
      of the Octet, and the System contains 4.145 x 10^9 Addresses.)


1. Total IP Addresses for Class A = 126 x 254^3 = 2,064,770,064
   Total available IP Addresses for Class A = 126 x 254^3
   Total available IP Host Addresses Equals 126 x 254^N
   (Where N = Number of Octet, and 'Y' equals the Address
    Range '128 – 254', 1 – 126 is not included in the
    Address Range Represented by the equation
            'Y = 254 – 126'.)


   Class A-1, 1 – 126, Default Subnet Mask 255.y.x.x:
   1,040,514,048 Networks and 8,129,016 Hosts: /00:08

   Class A-2, 1 – 126, Default Subnet Mask 255.255.y.x:
   516,160,512 Networks and 32,004 Hosts: /00:16

   Class A-3, 1 – 126, Default Subnet Mask 255.255.255.y:
   256,048,128 Networks and 126 Hosts: /00:24

   Class A-4, 1 – 126, Default Subnet Mask 255.255.255.255:
   252,047,376 Network / MultiCast IP Addresses / AnyCast: /00:32


2. Total IP Addresses for Class B = 64 x 254^3 = 1,048,772,096
   Total available IP Addresses for Class B = 64 x 254^3
   Total available IP Host Addresses Equals 64 x 254^N
   (Where N = Number of Octet, and 'Y' equals the Address
    Range '254 – Q'; 128 – 191 is not included in the
    Address Range Represented by the equation
          'Y = 254 – 64'.)


   Class B-1, 128 – 191, Default Subnet Mask 255.y.x.x:
   784,514,560 Networks and 4,129,024 Hosts: /10:08

   Class B-2, 128 – 191, Default Subnet Mask 255.255.y.x:
   197,672,960 Networks and 16,256 Hosts: /10:16

   Class B-3, 128 – 191, Default Subnet Mask 255.255.255.y:
   49,807,360 Networks and 64 Hosts: /10:24

   Class B-4, 128 – 191, Default Subnet Mask 255.255.255.255:
   16,777,216 Network / MultiCast IP Addresses / AnyCast: /10:32
```

3. Total IP Addresses for Class C = 32 x 254^3 = 524,386,048
   Total available IP Addresses for Class C = 32 x 254^3
   Total available IP Host Addresses Equals 32 x 254^N
   (Where N = Number of Octet, and 'Y' equals the Address
    Range '254 - Q'; 192 - 223 is not included in the
    Address Range Represented by the equation
          'Y = 254 - 32.)

   Class C-1, 192 - 223, Default Subnet Mask 255.y.x.x:
   458,321,664 Networks and 2,064,512 Hosts: /110:08

   Class C-2, 192 - 223, Default Subnet Mask 255.255.y.x:
   57,741,312 Networks and 8,128 Hosts: /110:16

   Class C-3, 192 - 223, Default Subnet Mask 255.255.255.y:
   7,274,496 Networks and 32 Hosts: /110:24

   Class C-4, 192 - 223, Default Subnet Mask 255.255.255.255:
   1,048,576 Network / MultiCast IP Addresses / AnyCast: /110:32

4. Total IP Addresses for Class D = 16 x 254^3 = 262,193,024
   Total available IP Addresses for Class D = 16 x 254^3
   Total available IP Host Addresses Equals 16 x 254^N
   (Where N = Number of Octet, and 'Y' equals the Address
    Range '254 - Q'; 224 - 239 is not included in the
    Address Range Represented by the equation
          'Y = 254 - 16'.)

   Class D-1, 224 - 239, Default Subnet Mask 255.y.x.x:
   245,676,928 Networks and 1,032,256 Hosts: /1110:08

   Class D-2, 224 - 239, Default Subnet Mask 255.255.y.x:
   15,475,712 Networks and 4,064 Hosts: /1110:16

   Class D-3, 224 - 239, Default Subnet Mask 255.255.255.y:
   974,848 Networks and 16 Hosts: /1110:24

   Class D-4, 224 - 239, Default Subnet Mask 255.255.255.255:
   65,536 Network / MultiCast IP Addresses / AnyCast: /1110:32

5. Total IP Addresses for Class E = 15 x 254^3 = 245,805,960
   Total available IP Addresses for Class E = 15 x 254^3
   Total available IP Host Addresses Equals 15 x 254^N
   (Where N = Number of Octet, and 'Y' equals the Address
    Range '254 - Q'; 240 - 254 is not included in the
    Address Range Represented by the equation
          'Y = 254 - 15'.)

   Class E-1, 240 - 254, Default Subnet Mask 255.y.x.x:
   231,289,860 Networks and 967,740 Hosts: /1111:08

   Class E-2, 240 - 254, Default Subnet Mask 255.255.y.x:
   13,658,850 Networks and 3,810 Hosts: /1111:16

   Class E-3, 240 - 254, Default Subnet Mask 255.255.255.y:
   806,625 Networks and 15 Hosts: /1111:24

   Class E-4, 240 - 254, Default Subnet Mask 255.255.255.255:
   50,625 Network / MultiCast IP Addresses / AnyCast: /1111:32

                           Table 4

                  Reality of the Structure of the
                Addressing Schematic Design for the IPt2
              Protocol Specification Using The Modern Binary System
                      Which yields a Combined Total
                    of 2.67 x 10^14 IP Addresses

            '254'   '254'   One Copy Of   'CIDR'
            Total   IP Area Code 'IPt1' Addressing   Network
           Zone IP   Addresses   Schematic   Descriptor
          Addresses   per   per 'IP Area Code |
           | | 'Zone IP'   Address' = 253 x 254^3 |
           v   v   Address   IP Addresses |
                                                                 |
          | Zone IP | IP Area Code | IP Address | V
         ++
          ... 255   :   255   : 255.000.000.000   /XXXX:XX
               | | |
               V   V   V
        <-Global-Net | InterNet | IntraNet

```
                              Table 5


   "Reality of the Structure of the Schematic for the 'IPt2' IP Specification
       Using the Modern Binary System."(Where the Value for the variable 'Y'
           is given by the Laws of the Octet, and Total Number of Available
                        IP Addresses Equals 2.67 x 10^14.)



1. Total IP Addresses for 'Class A' having '254' 'Zone IP' Addresses

                              = 254 x 254 x 126 x 254^3
                              = 254 x 254 x 2,064,770,064
                              = 1.332107 x 10^14

   Total of 254 IP 'IP Area Code' Addresses per 'Zone IP' Address

                              = 254 x 126 x 254^3
                              = 254 x 2,064,770,064
                              = 5.244516 x 10^11

Distribution per 'Zone IP' Address yielding the 'IP Area Code' Addresses

   Class A-1, 1 - 126, Default Subnet Mask 255.y.x.x:
   2.642906 x 10^11 Networks and 8,129,016 Hosts: /00:08

   Class A-2, 1 - 126, Default Subnet Mask 255.255.y.x:
   1.311048 x 10^11 Networks and 32,004 Hosts: /00:16

   Class A-3, 1 - 126, Default Subnet Mask 255.255.255.y:
   6.503622 x 10^10 Networks and 126 Hosts: /00:24

   Class A-4, 1 - 126, Default Subnet Mask 255.255.255.255:
   6.4020034 x 10^10 Network / MultiCast IP Addresses / AnyCast: /00:32
```

2. Total IP Addresses for 'Class B' having '254' 'Zone IP' Addresses

$$= 254 \times 254 \times 64 \times 254^3$$
$$= 254 \times 254 \times 1,048,772,096$$
$$= 6.766258 \times 10^{13}$$

   Total of 254 IP 'IP Area Code' Addresses per 'Zone IP' Address

$$= 254 \times 64 \times 254^3$$
$$= 254 \times 1,048,772,096$$
$$= 2.663881 \times 10^{11}$$

Distribution per 'Zone IP' Address yielding the 'IP Area Code' Addresses

   Class B-1, 128 - 191, Default Subnet Mask 255.y.x.x:
   1.992667×10^{11} Networks and 4,129,024 Hosts: /10:08

   Class B-2, 128 - 191, Default Subnet Mask 255.255.y.x:
   5.0208932×10^{10} Networks and 16,256 Hosts: /10:16

   Class B-3, 128 - 191, Default Subnet Mask 255.255.255.y:
   1.2651069×10^{10} Networks and 64 Hosts: /10:24

   Class B-4, 128 - 191, Default Subnet Mask 255.255.255.255:
   4.2614129×10^9 Network / MultiCast IP Addresses / AnyCast: /10:32

3. Total IP Addresses for 'Class C' having '254' 'Zone IP' Addresses

$$= 254 \times 254 \times 32 \times 254^3$$
$$= 254 \times 254 \times 524,386,048$$
$$= 3.383129 \times 10^{13}$$

Total of 254 IP 'IP Area Code' Addresses per 'Zone IP' Address

$$= 254 \times 32 \times 256^3$$
$$= 254 \times 524,386,048$$
$$= 1.331941 \times 10^{11}$$

Distribution per 'Zone IP' Address yielding the 'IP Area Code' Addresses

Class C-1, 192 - 223, Default Subnet Mask 255.y.x.x:
1.164137×10^{11} Networks and 2,064,512 Hosts: /110:08

Class C-2, 192 - 223, Default Subnet Mask 255.255.y.x:
1.466629×10^{10} Networks and 8,128 Hosts: /110:16

Class C-3, 192 - 223, Default Subnet Mask 255.255.255.y:
1.8477220×10^9 Networks and 32 Hosts: /110:24

Class C-4, 192 - 223, Default Subnet Mask 255.255.255.255:
2.663383×10^8 Network / MultiCast IP Addresses / AnyCast: /110:32

4. Total IP Addresses for 'Class D' having '254' 'Zone IP' Addresses

                              = 254 x 254 x 16 x 254^3
                              = 254 x 254 x 262,193,024
                              = 1.691558 x 10^13

    Total of 254 IP 'IP Area Code' Addresses per 'Zone IP' Address

                              = 254 x 16 x 254^3
                              = 254 x 262,193,024
                              = 6.659677 x 10^10

Distribution per 'Zone IP' Address yielding the 'IP Area Code' Addresses

    Class D-1, 224 - 239, Default Subnet Mask 255.y.x.x:
    6.240194 x 10^10 Networks and 1,032,256 Hosts: /1110:08

    Class D-2, 224 - 239, Default Subnet Mask 255.255.y.x:
    3.930831 x 10^9 Networks and 4,064 Hosts: /1110:16

    Class D-3, 224 - 239, Default Subnet Mask 255.255.255.y:
    2.476114 x 10^8 Networks and 16 Hosts: /1110:24

    Class D-4, 224 - 239, Default Subnet Mask 255.255.255.255:
    1.6646144 x 10^7 Network / MultiCast IP Addresses / AnyCast: /1110:32

5. Total IP Addresses for 'Class E' having '254' 'Zone IP' Addresses

                              = 254 x 254 x 15 x 254^3
                              = 254 x 254 x 245,805,960
                              = 1.585842 x 10^13

   Total of 254 IP 'IP Area Code' Addresses per 'Zone IP' Address

                              = 254 x 15 x 254^3
                              = 254 x 245,805,960
                              = 6.243471 x 10^10

Distribution per 'Zone IP' Address yielding the 'IP Area Code' Addresses

   Class E-1, 240 - 254, Default Subnet Mask 255.y.x.x:
   5.874762 x 10^10 Networks and 967,740 Hosts: /1111:08

   Class E-2, 240 - 254, Default Subnet Mask 255.255.y.x:
   3.4693479 x 10^9 Networks and 3,810 Hosts: /1111:16

   Class E-3, 240 - 254, Default Subnet Mask 255.255.255.y:
   2.0488275 x 10^8 Networks and 15 Hosts: /1111:24

   Class E-4, 240 - 254, Default Subnet Mask 255.255.255.255:
   1.285875 x 10^7 Network / MultiCast IP Addresses / AnyCast: /1111:32

Chapter II: Suggestion for the IPt1 and IPt2 Internet Protocol Address
          Space, Supernetting and the New 'CIDR' Notation

    The "Internet Protocol v4 Address Space" allocation Table, as noted in
    'Table 1' above, can retain the same IP Address Allocation, in the 'IPt1
    IP Protocol Specification'. In fact, the only guidelines that would be
    different, and appropriated, are those governing the 'Host' Address
    Allocation, whose distribution is Defined by 'The Laws of the Octet'.
    Furthermore, noting Table 2, it should be understood that it represents
    an 'IP Address Allocation / Translation Guide', which would be used to
    determine the total Number of Available IP Addresses when converting from
    the IPv4 to the IPt1 Addressing Specifications. This Table represents
    the IP Address conversion, which should be viewed as extremely important,
    because the IPt1 Specification makes use of nearly all of the total number
    of IP Addresses for use as the Network IP Address. And while there are
    Host Addresses Assigned, there are No Viable network IP Addresses wasted
    or used for this purpose (See The Laws of the Octet.).

    Nevertheless, the description shown in Table 6 provides an Example, which
    describes the 'Supernetting of an IP Address' when using the 'IPt1'
    specification, which also uses the New Notation for 'CIDR'. However, this
    is a Practice, 'Supernetting of an IP Address', that can only be used
    BEHIND the 'Point of Demarcation' (The 'VIABLE Network IP Address'), for
    the purpose of Subnet / Host creation. Because to do so otherwise would not
    only be in violation of 'The Laws of the Octet', but it would create an
    Addressing Conflict within the IP Addressing Scheme itself. Even still,
    is should nevertheless be very clear, that the 'CIDR' Notation represents
    the 'Bit Mapped Displacement' of the Network IP Address, and nothing more.

    Moreover, since the IPt1 specification uses the same IP Addressing methods
    for enumeration, as used in IPv4. It can quite easily be employed, and
    replace, in every scenario now occupied and used by the IPv4 Specification.
    There is an exception however, which translates into recovery of wasted IP
    Addresses that can be recovered from the "Internet Protocol v4 Address
    Space". In other words, as previously mentioned, the primary difference
    between these IP Specifications, beyond the Schematic itself, is the way
    they each use and assign 'Host IP Addresses'. Where by, the assignment
    of '1' IP Address, is just that, because there are No 16 Million Host IP
    Addresses that will accompany this assignment under the IPt1 specification
    (See Appendix I). And while this may be viewed as a problem with the IPt1
    specification, it certainly does not become a consideration for the
    implementation of the IPt2 Addressing Specification. In fact, the IPt2
    Addressing Specification not only provides foundation for the possibility
    for Unlimited IP Addresses, it simplifies the "Internet Protocol Address
    Space" Table, (See Table 7) while reducing the Management Burden
    associated with the Allocation of IP Addresses.

```
                        TABLE 6


             IPt1 'Bit Mapped' IP Address Distribution
          Derived from the Modern Method for Binary Enumeration
                     Using the 'CIDR' Notation

             1                    2             3              4

     Network IP Address      Number of      Exponential     Total
       Class Range             BITS          equation     Number of
      /Starting Point                        yielding        HOST
     of the Network                       Total Number  IP Addresses
        Prefix:                               HOST
     Number of Bits                        IP Addresses
          |                    |              |             |
          V                    V              V             V
     "/New 'CIDR'
       Notation"


                           CLASS A



                          Class A-1



       0-126/00:08   =       8/8       =      2^X   =  8,129,016



       -------------------------------------------------------



                          Class A-2



       0-126/00:16   =      16/8       =      2^X   =   32,004



       -------------------------------------------------------
```

Class A-3

    0-126/00:24   =   24/8   =   2^X =   126

                        Class A-4

    0-126/00:25   =   25/8   =   2^7 =   128
                            | | |
                            V   V   V
    0-126/00:30   =   30/8   =   2^2 =   4

    0-126/00:31   =   31/8   =   2^1 =   2

    0-126/00:32   =   32/8   =   2^0 =   0*

                         CLASS B

                        Class B-1

    0-126/10:08   =   8/16   =   2^X = 4,129,024

Class B-2

   128-191/10:16   =   16/16   =   2^X =   16,256

                        Class B-3

   128-191/10:24   =   24/16   =   2^X =   32

                        Class B-4

   128-191/10:25   =   25/16   =   2^7 =   128
                          | | |
                          V   V   V
   128-191/10:30   =   30/16   =   2^4 =   4

   128-191/10:31   =   31/16   =   2^1 =   2

   128-191/10:32   =   32/16   =   2^0 =   0*

CLASS C

                            Class C-1

      192-223/110:08   =   8/24   =   2^X = 2,064,512

                            Class C-2

      192-223/110:16   =   16/24   =   2^X =   8,128

                            Class C-3

      192-223/110:24   =   24/24   =   2^X = 32

```
                        Class C-4


    0-126/110:25    =    25/24      =      2^7 =      128
                         |                 |          |
                         V                 V          V
    0-126/110:30    =    30/24      =      2^2 =      4


    0-126/110:31    =    31/24      =      2^1 =      2


    0-126/110:32    =    32/24      =      2^0 =      0*




                         CLASS D




                        Class D-1




    224-239/1110:08   =    8/28       =      2^X  = 1,032,256




  -------------------------------------------------------




                        Class D-2




    224-239/1110:16   =    16/28       =      2^X  =  4,064




  -------------------------------------------------------
```

Class D-3

   224-239/1110:24 =   24/28   =   2^X =   16

                          Class D-4

   224-239/1110:25   =   25/28   =   2^7 =   128
                             | | |
                             V   V   V
   224-239/1110:30   =   30/28   =   2^2 =   4

   224-239/1110:31   =   31/28   =   2^1 =   2

   224-239/1110:32   =   32/28   =   2^0 =   0*

                          CLASS E

                          Class E-1

   240-254/1111:08   =   8/~29   =   2^X   = 967,740

```
                         Class E-2


   240-254/1111:16    =    16/~29      =      2^X  =  3,810



   ----------------------------------------------------------


                         Class E-3


   240-254/1111:24    =    24/~29      =      2^X  =    15



   ----------------------------------------------------------


                         Class E-4


   240-254/1111:25    =    25/~29      =      2^7  =    128
                           |                  |           |
                           V                  V           V
   240-254/1111:30    =    30/~29      =      2^2  =     4


   240-254/1111:31    =    31/~29      =      2^1  =     2


   240-254/1111:32    =    32/~29      =      2^0  =     0*
```

   *Note: Using the Current or Modern Method for Binary Enumeration,
       the solution here, regarding the Supernetting function and
       'CIDR', is the Correct answer. However, under the New Binary
       System, the solution would be; 2^0 = 1, and this would be True
       because, 'In the New Binary System: When considering the Network
       IP Address, it must be realized that Not All of the 32 Bit range
       of the IP Address is used in the Address Class range when dealing
       with a '32 Bit Mapped IP Address Space', as in /00:32. Still, if
       the Subnet IP = 126.126.126.126, then the Host IP Address could
       equal 126.126.126.127; or respectively 254.254.254.254 and
       254.254.254.253. In which case, it should be realized, by
       definition, that '255' and '000' can not be used.

```
                        Table 7

            INTERNET PROTOCOL t2 (64 Bit) ADDRESS SPACE


              IPt2 IP Address Prefix    IPt1 Address   Distribution    Date
              /       |       \         /Schematic\    /Purpose\      /   \
  Reserved   CIDR   Zone IP  IP Area    IP Address        |           |
   BITS      Network   |       Code     Assignment        |           |
  /    \   Descriptor  V        |           |             V           V
 ----+----+--------+-------+---------+----------------+-------------+------
  8  | 8  |  None    000:      000:   000.000.000.000     None       4/2002
  8  | 8  |  All     001:      All:   XXX.XXX.XXX.XXX      NA        4/2002
  8  | 8  |  All     002:      All:   XXX.XXX.XXX.XXX      SA        4/2002
  8  | 8  |  All     003:      All:   XXX.XXX.XXX.XXX      EU        4/2002
  8  | 8  |  All     004:      All:   XXX.XXX.XXX.XXX      OS        4/2002
  8  | 8  |  All     005:      All:   XXX.XXX.XXX.XXX      AU        4/2002
  8  | 8  |  All     006:      All:   XXX.XXX.XXX.XXX      AF        4/2002
  8  | 8  |  All   007-254:    All:   XXX.XXX.XXX.XXX  IANA/RESERVED  4/2002
  8  | 8  |  All   001-254:  000-254: 000.000.000.000  IANA/EMERGENCY 4/2002
  8  | 8  | /00:08   255:      255:   127.000.000.000  IANA/LoopBack  4/2002




                 IPt2 64 Bit Mapped Address Space

  Prefix Address <---> (Or Trunk Identifier)                    CIDR
         /   |        |      \              32 Bit IPt1      Network
 | 8 Bits | 8 Bits | 8 Bits | 8 Bits      | Address Space  |Descriptor
 +---------+---------+---------------------+--------------------------+
 |Reserved:|Reserved:| Zone IP:|IP Area Code:| XXX.XXX.XXX.XXX | /XXXX:XX |
 +---------+---------+---------------------+--------------------------+
```

INTERNET PROTOCOL t2 ADDRESS SPACE INDEX

CONTIENTS /ZONE IP\	COUNTRIES / \	IP AREA CODE DISTRIBUTION / \	DATE / \	COMMENTS / \
'NA' NORTH AMERICA 001: IP AREA CODE CONTIENT SURPLUS '194'	'3' UNITED STATES	'60'	4/2002	NONE
		'001 - 050:'	4/2002	NONE
	MEXICO	'051 - 054:'	4/2002	NONE
	CANADA	'055 - 060:'	4/2002	NONE
'SA' SOUTH AMERICA 002: IP AREA CODE CONTIENT SURPLUS '166'	'38'	'88'	4/2002	NONE
	Brazil	'001 - 050:'	4/2002	NONE
	Antigua and Barbuda	'051 - 052:'	4/2002	NONE
	Aruba	'053:'	4/2002	NONE
	Bahamas	'054:'	4/2002	NONE
	Barbados	'055:'	4/2002	NONE
	Cayman Islands	'056:'	4/2002	NONE
	Cuba	'057:'	4/2002	NONE
	Dominica	'058:'	4/2002	NONE
	Dominican Republic	'059:'	4/2002	NONE
	Grenada	'060:'	4/2002	NONE
	Guadeloupe	'061:'	4/2002	NONE
	Jamaica	'062:'	4/2002	NONE
	Haiti	'063:'	4/2002	NONE
	Martinique	'064:'	4/2002	NONE

```
            |
            |  Puerto Rico      '065:'              4/2002   NONE
            |
            |  Saint Kitts      '066:'              4/2002   NONE
            |   and Nevis
            |
            |  Saint Lucia      '067:'              4/2002   NONE
            |
            |  Trinidad         '068:'              4/2002   NONE
            |  and Tobago
            |
            |  Virgin Islands   '069:'              4/2002   NONE
            |
            |  Belize           '070:'              4/2002   NONE
            |
            |  Costa Rica       '071:'              4/2002   NONE
            |
            |  El Salvador      '072:'              4/2002   NONE
            |
            |  Guatemala        '073:'              4/2002   NONE
            |
            |  Honduras         '074:'              4/2002   NONE
            |
            |  Nicaragua        '075:'              4/2002   NONE
            |
            |  Panama           '076:'              4/2002   NONE
            |
            |  Argentina        '077:'              4/2002   NONE
            |
            |  Bolivia          '078:'              4/2002   NONE
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            |  Chile            '079:'              4/2002   NONE
            |
            |  Colombia         '080:'              4/2002   NONE
            |
            |  Ecuador          '081:'              4/2002   NONE
            |
            |  French Guiana    '082:'              4/2002   NONE
            |
            |  Guyana           '083:'              4/2002   NONE
            |
            |  Paraguay         '084:'              4/2002   NONE
```

	Peru	'085:'	4/2002	NONE
	Suriname	'086:'	4/2002	NONE
	Uruguay	'087:'	4/2002	NONE
	Venezuela	'088:'	4/2002	NONE
'EU' EUROPE 003: IP AREA CODE CONTIENT SURPLUS '180'	'45'	'74'	4/2002	NONE
	Belarus	'001'	4/2002	NONE
	Russian Federation	'002 - 031:'	4/2002	NONE
	Bulgaria	'032:'	4/2002	NONE
	Czech Republic	'033:'	4/2002	NONE
	Hungary	'034:'	4/2002	NONE
	Moldova	'035:'	4/2002	NONE
	Poland	'036:'	4/2002	NONE
	Romania	'037:'	4/2002	NONE
	Slovakia	'038:'	4/2002	NONE
	Ukraine	'039:'	4/2002	NONE
	Denmark	'040:'	4/2002	NONE
	Estonia	'041:'	4/2002	NONE
	Faeroe Islands	'042:'	4/2002	NONE
	Finland	'043:'	4/2002	NONE
	Iceland	'044:'	4/2002	NONE
	Ireland	'045:'	4/2002	NONE

Latvia	'046:'	4/2002	NONE
Lithuania	'047:'	4/2002	NONE
Norway	'048:'	4/2002	NONE
Sweden	'049:'	4/2002	NONE
United Kingdom	'050:'	4/2002	NONE
Albania	'051:'	4/2002	NONE
Andorra	'052:'	4/2002	NONE
Bosnia and Herzegowina	'053:'	4/2002	NONE
Croatia (Hrvatska)	'054:'	4/2002	NONE
Gibraltar	'055:'	4/2002	NONE
Greece	'056:'	4/2002	NONE
Vatican City State	'057:'	4/2002	NONE
Italy	'058:'	4/2002	NONE
Macedonia	'059:'	4/2002	NONE
Malta	'060:'	4/2002	NONE
Portugal	'061:'	4/2002	NONE
San Marino	'062:'	4/2002	NONE
Slovenia	'063:'	4/2002	NONE
Spain	'064:'	4/2002	NONE
Yugoslavia	'065:'	4/2002	NONE
Austria	'066:'	4/2002	NONE
Belgium	'067:'	4/2002	NONE
France	'068:'	4/2002	NONE

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                        |  Liechtenstein      '070:'                    4/2002   NONE
                        |
                        |  Luxembourg         '071:'                    4/2002   NONE
                        |
                        |  Monaco             '072:'                    4/2002   NONE
                        |
                        |  Netherlands        '073:'                    4/2002   NONE
                        |
                        |  Switzerland        '074:'                    4/2002   NONE
                        |
                        |
                        |
     -----------+-----------+---------------------------+-------+---------
        'OS'    |   '23'          '23'                    4/2002   NONE
      OCEANIA   |
      STATES    |  Australia          '001:'             4/2002   NONE
       004:     |
                |  Wallis             '002:'             4/2002   NONE
   IP AREA CODE |  and Futuna Islands
     CONTIENT   |
      SURPLUS   |  New Zealand        '003:'             4/2002   NONE
       '231'    |
                |  Fiji               '004:'             4/2002   NONE
                |
                |  Papua New Guinea   '005:'             4/2002   NONE
                |
                |  New Caledonia      '006:'             4/2002   NONE
                |
                |  Solomon Islands    '007:'             4/2002   NONE
                |
                |  Vanuatu            '008:'             4/2002   NONE
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                |  Guam               '009:'             4/2002   NONE
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                |  Kiribati           '010:'             4/2002   NONE
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                |  Marshall Islands   '011:'             4/2002   NONE
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                |  Micronesia         '012:'             4/2002   NONE
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                |  Nauru              '013:'             4/2002   NONE
                |
                |  Palau              '014:'             4/2002   NONE
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                     |   American Samoa      '015:'                       4/2002   NONE
                     |
                     |   Northern Mariana    '016:'                       4/2002   NONE
                     |     Islands
                     |
                     |   Cook Islands        '017:'                       4/2002   NONE
                     |
                     |   French Polynesia    '018:'                       4/2002   NONE
                     |    (Tahiti)
                     |
                     |   Niue                '019:'                       4/2002   NONE
                     |
                     |   Pitcairn            '020:'                       4/2002   NONE
                     |
                     |   Samoa               '021:'                       4/2002   NONE
                     |
                     |   Tonga               '022:'                       4/2002   NONE
                     |
                     |   Tuvalu              '023:'                       4/2002   NONE
                     |
                     |
   ------------+-----------+---------------------------+-------+---------
      'AU'     |   '55'        '55'                        4/2002   NONE
    AFRICAN    |
     UNION     |   Burundi             '001'                        4/2002   NONE
      005:     |
               |   Democratic          '002:'                       4/2002   NONE
 IP AREA CODE  |   Republic of the Congo
   CONTIENT    |
    SURPLUS    |   Djibouti            '003:'                       4/2002   NONE
     '199'     |
               |   Eritrea             '004:'                       4/2002   NONE
               |
               |   Ethiopia            '005:'                       4/2002   NONE
               |
               |   Kenya               '006:'                       4/2002   NONE
               |
               |   Madagascar          '007:'                       4/2002   NONE
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               |   Malawi              '008:'                       4/2002   NONE
               |
               |   Mauritania          '009:'                       4/2002   NONE
               |
               |   Mozambique          '010:'                       4/2002   NONE
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                |  Réunion            '011:'              4/2002   NONE
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                |  Rwanda             '012:'              4/2002   NONE
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                |  Seychelles         '013:'              4/2002   NONE
                |
                |  Somalia            '014:'              4/2002   NONE
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                |  Tanzania           '015:'              4/2002   NONE
                |
                |  Uganda             '016:'              4/2002   NONE
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                |  Zambia             '017:'              4/2002   NONE
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                |  Zimbabwe           '018:'              4/2002   NONE
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                |  Cameroon           '020:'              4/2002   NONE
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                |  Chad               '021:'              4/2002   NONE
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                |  Congo              '022:'              4/2002   NONE
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                |  Equatorial Guinea  '023:'              4/2002   NONE
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                |  Central African    '024:'              4/2002   NONE
                |  Republic
                |
                |  Gabon              '025:'              4/2002   NONE
                |
                |  Sao Tome           '026:'              4/2002   NONE
                |  and Principe
                |
                |  Algeria            '027:'              4/2002   NONE
                |
                |  Egypt              '028:'              4/2002   NONE
                |
                |  Libyan Arab        '029:'              4/2002   NONE
                |  Jamahiriya
                |
                |  Morocco            '030:'              4/2002   NONE
                |
                |  Sudan              '031:'              4/2002   NONE
                |
                |  Tunisia            '032:'              4/2002   NONE
```

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         |
         | Western Sahara    '033:'              4/2002   NONE
         |
         | Botswana          '034:'              4/2002   NONE
         |
         | Lesotho           '035:'              4/2002   NONE
         |
         | Namibia           '036:'              4/2002   NONE
         |
         | South Africa      '037:'              4/2002   NONE
         |
         | Swaziland         '038:'              4/2002   NONE
         |
         | Benin             '039:'              4/2002   NONE
         |
         | Burkina Faso      '040:'              4/2002   NONE
         |
         | Cape Verde        '041:'              4/2002   NONE
         |
         | Côte d'Ivoire     '042:'              4/2002   NONE
         |
         | Gambia, The       '043:'              4/2002   NONE
         |
         | Ghana             '044:'              4/2002   NONE
         |
         | Guinea            '045:'              4/2002   NONE
         |
         | Guinea-Bissau     '046:'              4/2002   NONE
         |
         | Liberia           '047:'              4/2002   NONE
         |
         | Mali              '048:'              4/2002   NONE
         |
         | Mauritania        '049:'              4/2002   NONE
         |
         | Niger             '050:'              4/2002   NONE
         |
         | Nigeria           '051:'              4/2002   NONE
         |
         | Saint Helena      '052:'              4/2002   NONE
         |
         | Senegal           '053:'              4/2002   NONE
         |
         | Sierra Leone      '054:'              4/2002   NONE
         |
         | Togo              '055:'              4/2002   NONE
```

```
                |
                |
                |
     -----------+-----------+--------------------------+-------+---------
       'AF'      |   '55'          '151'                 4/2002   NONE
      ASIAN      |
    FEDERATION   | China            '001-051'            4/2002   NONE
      006:       |
                 | Japan            '052:'               4/2002   NONE
  IP AREA CODE   |
    CONTIENT     | Korea (North)    '053:'               4/2002   NONE
    SURPLUS      |
     '103'       | Korea (South)    '054:'               4/2002   NONE
                 |
                 | Macau            '055:'               4/2002   NONE
                 |
                 | Mongolia         '056:'               4/2002   NONE
                 |
                 | Taiwan           '057:'               4/2002   NONE
                 |
                 | Afghanistan      '058:'               4/2002   NONE
                 |
                 | Bangladesh       '059:'               4/2002   NONE
                 |
                 | Bhutan           '060:'               4/2002   NONE
                 |
                 | India            '061-111'            4/2002   NONE
                 |
                 | Iran             '112:'               4/2002   NONE
                 |
                 | Kazakhstan       '113:'               4/2002   NONE
                 |
                 | Kyrgyzstan       '114:'               4/2002   NONE
                 |
                 | Maldives         '115:'               4/2002   NONE
                 |
                 | Nepal            '116:'               4/2002   NONE
                 |
                 | Pakistan         '117:'               4/2002   NONE
                 |
                 | Sri Lanka        '118:'               4/2002   NONE
                 |
                 | Tajikistan       '119:'               4/2002   NONE
                 |
                 | Turkmenistan     '120:'               4/2002   NONE
                 |
```

```
| Uzbekistan        '121:'              4/2002   NONE
|
| Brunei Darussalam '122:'              4/2002   NONE
|
| Cambodia          '123:'              4/2002   NONE
|
| East Timor        '124:'              4/2002   NONE
|
| Indonesia         '125:'              4/2002   NONE
|
| Laos              '126:'              4/2002   NONE
|
| Malaysia          '127:'              4/2002   NONE
|
| Myanmar (Burma)   '128:'              4/2002   NONE
|
| Philippines       '129:'              4/2002   NONE
|
| Singapore         '130:'              4/2002   NONE
|
| Thailand          '131:'              4/2002   NONE
|
| Viet Nam          '132:'              4/2002   NONE
|
| Armenia           '133:'              4/2002   NONE
|
| Azerbaijan        '134:'              4/2002   NONE
|
| Bahrain           '135:'              4/2002   NONE
|
| Cyprus            '136:'              4/2002   NONE
|
| Georgia           '137:'              4/2002   NONE
|
| Iraq              '138:'              4/2002   NONE
|
| Israel            '139:'              4/2002   NONE
|
| Jordan            '140:'              4/2002   NONE
|
| Kuwait            '141:'              4/2002   NONE
|
| Lebanon           '142:'              4/2002   NONE
|
| Gambia, The       '143:'              4/2002   NONE
```

```
    |
    |  Oman                '144:'                    4/2002   NONE
    |
    |  Qatar               '145:'                    4/2002   NONE
    |
    |  Palestine           '146:'                    4/2002   NONE
    |
    |  Saudi Arabia        '147:'                    4/2002   NONE
    |
    |  Syria               '148:'                    4/2002   NONE
    |
    |  Turkey              '149:'                    4/2002   NONE
    |
    |  United Arab         '150:'                    4/2002   NONE
    |  Emirates
    |
    |  Yemen               '151:'                    4/2002   NONE
    |
    ------------+------------+----------------------------+-------+---------
```

   Nevertheless, any careful examination and study of Table 7, the "INTERNET
   PROTOCOL t2 ADDRESS SPACE", and its INDEX. Anyone would readily conclude;
   'It does not matter if the World's Population Doubled or Tripled in 5, 10,
   or 15 years from now, because the number of IP Addresses contained in the
   Surplus of IP Area Code Addresses, for each Continent, would presently
   sustain a 20 Billion total World Population, and this says nothing about
   the Reserve IP Addresses allocation to IANA. In fact, if there is an
   agreement (which it will be) regarding the New Binary System, it will not
   pose any difficulties for IANA, because these IP Specifications were
   derived and first discovered, using the New Method of Enumeration, as
   defined by the New Binary System. In other words, the IPt1 and IPt2 IP
   Protocol Specifications overwhelmingly surpasses every Requirement
   Specified in RFC1550.

Chapter III: IPt1 and IPt2; The APRA and IN-ADD.APRA Addresses

     It has been mention that the IPt1 IP Specification differs only in 2
     primary areas from that of the IPv4 IP Addressing system. And these
     differences account for the use of more than 99.999...+ % of the total
     number of available IP Addresses contained in this System of Addressing,
     and the way Host IP Addresses are allocated. Needless to say, other than
     the Schematic itself, that's it. In other words, the use of 'APRA and
     IN-ADD.APRA functions the same in the IPt1 IP Specification, and except
     for the 'SIGHT' of the Prefixes used in the IPt2 Specification, their use
     functions the same under this IP Specification as well. In other words,
     the Prefixes used in the IPt2 IP Specification, serve only the provisions
     regarding stability, control, management, and increase the Number of IP
     Addresses (And nothing more!). Because other than these benefits, the
     Prefixes used in the IPt2 IP Specification does absolutely nothing to
     effect, nor change any other the practices or procedures used in the
     IPv4 Protocol. Furthermore, while I do not advocate the used of the
     Primary IP Protocol in Networking Household Appliances, (behind the
     demarcation). It should be clearly understood, not only is the IPt2 IP
     Specification well suited for this application, but there is absolutely No
     Protocol Requirement, or Demand, it is not suited to address...And it goes
     without saying, it does indeed, maintain a sufficient supply of IP
     Addresses, regardless (The 'IPtX' IP Specification: See Table 8, and
     Appendix II).

                              Table 8

                        'IPtX IP Specification'
              (Topology of Internet Backbone Without Hierarchy)

                   Addressing   Header BITS Size
                   Specification   Specification

                      IPt1   =   32 Bit

                      IPt2   =   64 Bit

                      IPt3   =   96 Bit

                      IPt4   =   128 Bit

                      IPt5   =   160 Bit
                       :   :   :
                      IPt100   =   3,200 Bit
                       :   :   :
                      IPt5000   =   160,000 Bit
                       :   :   :
                      IPtX   =   Infinity

This document, whose only objective was the explanation for the
method(s) used in the Efficiency Determination of an IP Addressing
Specification, and the development of a possible (Suggestion) "INTERNET
PROTOCOL ADDRESS SPACE" for the 'IPt1 and IPt2 IP Addressing
Specifications', which actually did not directly raise any security
issues. Hence, there are no issues raised that warrant Security
Considerations.

Figure 1-A; Visualizing the 'Zone IP' and 'IP Area Code' Addresses

Figure 2-A: 'NA' Continent; Zone IP Address = '001' (See Table 7)

Figure 3-A: Different 'IP Area Code' Address for each State

(See the Index of Table 7)

Appendix I: IPt1 Internet Protocol Address Space

                        TABLE 9

              Internet Protocol t1 Address Space

              Compatibility / Conversion with the
              Internet Protocol v4 Address Space

Address Block | Registry - Purpose | Date

Number of IP | Note: Host IP Addresses are Not, and |
Addresses | Can not Be Used for a Direct |
Issued - | Active Connection. They can |
                  | only be Used in conjunction |
IPaddNum/ | with a Requestor / Server, as |
CIDRNetDescrip | a Client having a Subordinate |
                  V   function, which defines a Host V
---------------   --------------------------------------   ------
All 000/00:8   IANA - Reserved   Sep 81
  1 001/00:8   IANA - Reserved   Sep 81
  1 002/00:8   IANA - Reserved   Sep 81
  1 003/00:8   General Electric Company   May 94
  1 004/00:8   Bolt Beranek and Newman Inc.   Dec 92
  1 005/00:8   IANA - Reserved   Jul 95
  1 006/00:8   Army Information Systems Center   Feb 94
  1 007/00:8   IANA - Reserved   Apr 95
  1 008/00:8   Bolt Beranek and Newman Inc.   Dec 92
  1 009/00:8   IBM   Aug 92
  1 010/00:8   IANA - Private Use   Jun 95
  1 011/00:8   DoD Intel Information Systems   May 93
  1 012/00:8   AT&T Bell Laboratories   Jun 95
  1 013/00:8   Xerox Corporation   Sep 91
  1 014/00:8   IANA - Public Data Network   Jun 91
  1 015/00:8   Hewlett-Packard Company   Jul 94
  1 016/00:8   Digital Equipment Corporation   Nov 94
  1 017/00:8   Apple Computer Inc.   Jul 92
  1 018/00:8   MIT   Jan 94
  1 019/00:8   Ford Motor Company   May 95
  1 020/00:8   Computer Sciences Corporation   Oct 94
  1 021/00:8   DDN-RVN   Jul 91
  1 022/00:8   Defense Information Systems Agency   May 93
  1 023/00:8   IANA - Reserved   Jul 95
  1 024/00:8   ARIN - Cable Block   May 01
                   (Formerly IANA - Jul 95)

```
1  025/00:8       Royal Signals and Radar Establishment  Jan 95
1  026/00:8       Defense Information Systems Agency      May 95
1  027/00:8       IANA - Reserved                        Apr 95
1  028/00:8       DSI-North                              Jul 92
1  029/00:8       Defense Information Systems Agency      Jul 91
1  030/00:8       Defense Information Systems Agency      Jul 91
1  031/00:8       IANA - Reserved                        Apr 99
1  032/00:8       Norsk Informasjonsteknologi            Jun 94
1  033/00:8       DLA Systems Automation Center          Jan 91
1  034/00:8       Halliburton Company                    Mar 93
1  035/00:8       MERIT Computer Network                 Apr 94
1  036/00:8       IANA - Reserved                        Jul 00
               (Formerly Stanford University - Apr 93)
1  037/00:8       IANA - Reserved                        Apr 95
1  038/00:8       Performance Systems International       Sep 94
1  039/00:8       IANA - Reserved                        Apr 95
1  040/00:8       Eli Lily and Company                   Jun 94
1  041/00:8       IANA - Reserved                        May 95
1  042/00:8       IANA - Reserved                        Jul 95
1  043/00:8       Japan Inet                             Jan 91
1  044/00:8       Amateur Radio Digital Communications   Jul 92
1  045/00:8       Interop Show Network                   Jan 95
1  046/00:8       Bolt Beranek and Newman Inc.           Dec 92
1  047/00:8       Bell-Northern Research                 Jan 91
1  048/00:8       Prudential Securities Inc.             May 95
1  049/00:8       Joint Technical Command                May 94
               Returned to IANA                          Mar 98
1  050/00:8       Joint Technical Command                May 94
               Returned to IANA                          Mar 98
1  051/00:8       Department of Social Security of UK    Aug 94
1  052/00:8       E.I. duPont de Nemours and Co., Inc.   Dec 91
1  053/00:8       Cap Debis CCS                          Oct 93
1  054/00:8       Merck and Co., Inc.                    Mar 92
1  055/00:8       Boeing Computer Services               Apr 95
1  056/00:8       U.S. Postal Service                    Jun 94
1  057/00:8       SITA                                   May 95
1  058/00:8       IANA - Reserved                        Sep 81
1  059/00:8       IANA - Reserved                        Sep 81
1  060/00:8       IANA - Reserved                        Sep 81
1  061/00:8       APNIC - Pacific Rim                    Apr 97
1  062/00:8       RIPE NCC - Europe                      Apr 97
1  063/00:8       ARIN                                   Apr 97
1  064/00:8       ARIN                                   Jul 99
1  065/00:8       ARIN                                   Jul 00
1  066/00:8       ARIN                                   Jul 00
1  067/00:8       ARIN                                   May 01
1  068/00:8       ARIN                                   Jun 01
```

```
10  069-079/00:8  IANA - Reserved                     Sep 81
 1  080/00:8       RIPE NCC                            Apr 01
 1  081/00:8       RIPE NCC                            Apr 01
14  082-095/00:8  IANA - Reserved                     Sep 81
31  096-126/00:8  IANA - Reserved                     Sep 81
 1  127/00:8       IANA - Reserved                     Sep 81
64  128-191/00:8  Various Registries                  May 93
 1  192/00:8       Various Registries - MultiRegional  May 93
 1  193/00:8       RIPE NCC - Europe                   May 93
 1  194/00:8       RIPE NCC - Europe                   May 93
 1  195/00:8       RIPE NCC - Europe                   May 93
 1  196/00:8       Various Registries                  May 93
 1  197/00:8       IANA - Reserved                     May 93
 1  198/00:8       Various Registries                  May 93
 1  199/00:8       ARIN - North America                May 93
 1  200/00:8       ARIN - Central and South America    May 93
 1  201/00:8       Reserved - Central and South America May 93
 1  202/00:8       APNIC - Pacific Rim                 May 93
 1  203/00:8       APNIC - Pacific Rim                 May 93
 1  204/00:8       ARIN - North America                Mar 94
 1  205/00:8       ARIN - North America                Mar 94
 1  206/00:8       ARIN - North America                Apr 95
 1  207/00:8       ARIN - North America                Nov 95
 1  208/00:8       ARIN - North America                Apr 96
 1  209/00:8       ARIN - North America                Jun 96
 1  210/00:8       APNIC - Pacific Rim                 Jun 96
 1  211/00:8       APNIC - Pacific Rim                 Jun 96
 1  212/00:8       IPE NCC - Europe                    Oct 97
 1  213/00:8       RIPE NCC - Europe                   Mar 99
 1  214/00:8       US-DOD                              Mar 98
 1  215/00:8       US-DOD                              Mar 98
 1  216/00:8       ARIN - North America                Apr 98
 1  217/00:8       RIPE NCC - Europe                   Jun 00
 1  218/00:8       APNIC - Pacific Rim                 Dec 00
 1  219/00:8       APNIC                               Sep 01
 1  220/00:8       APNIC                               Dec 01
 3  221-223/00:8  IANA - Reserved                     Sep 81
16  224-239/00:8  IANA - Multicast                    Sep 81
16  240-255/00:8  IANA - Reserved                     Sep 81
----------------------------------------------------------------------|
Note: Host IP Addresses are determined by the 'IPt1' Addressing
      Schematic, and can Not Be Used for / to Establish A Direct
      Internet Connection (Connection Outside of its Network Domain)
----------------------------------------------------------------------|
```

```
                          TABLE 10

            Internet Protocol t1 Address Space INDEX

                 IPaddNum  =  Network IP Address

            CIDRNetDescrip = CIDR Network Descriptor

           Current Number of IP Network Addresses Issued
              Accounts for  =  253 IP Network Addresses


                                             CDIR
                                            Network
                         Class A           Descriptor

        A-1: Issued = 127 , Remaining = 1,040,513,921   /00:08

        A-2: Issued = None, Remaining = 516,160,512     /00:16

        A-3: Issued = None, Remaining = 256,048,128     /00:24

        A-4: Issued = None, Remaining = 252,047,376     /00:32




                           Class B

        B-1: Issued = 64  , Remaining = 784,514,496     /10:08

        B-2: Issued = None, Remaining = 197,672,960     /10:16

        B-3: Issued = None, Remaining = 49,807,360      /10:24

        B-4: Issued = None, Remaining = 16,777,216      /10:32




                           Class C

        C-1: Issued = 32  , Remaining = 458,321,632     /110:08

        C-2: Issued = None, Remaining = 57,741,312      /110:16

        C-3: Issued = None, Remaining = 7,274,496       /110:24

        C-4: Issued = None, Remaining = 1,048,576       /110:32
```

```
                            Class D

        D-1: Issued = 16  , Remaining = 245,676,912    /1110:08

         D-2: Issued = None, Remaining = 15,475,712     /1110:16

         D-3: Issued = None, Remaining = 974,848        /1110:24

         D-4: Issued = None, Remaining = 65,536         /1110:32


                            Class E

         E-1: Issued = 15  , Remaining = 231,289,845    /1111:08

          E-2: Issued = None, Remaining = 13,658,850     /1111:16

          E-3: Issued = None, Remaining = 806,625        /1111:24

          E-4: Issued = None, Remaining = 50,625         /1111:32
```

Appendix II: Mathematical Analysis of the Structure, and the Definition
          of the IPtX Protocol(s) Addressing System. (Part1)

   The 'IPtX' is a System of Addressing Protocol Specifications; An Internet
   Protocol 't'ele-communications Specification having an Unlimited Size, or
   Capacity, equaling the Number representing the displacement of the
   'IP Bit' Mapped Address Space, which is used to Establish Communications
   between Networked Computers. This Protocol Specification represents a
   Mathematical Series of a Class of Protocols, a Numbering System that
   Increases in 32 Bit Increments, or Some Multiple of 32, which is
   represented by the Number Specified, and Replaced in the 'X' notation used
   in the name; 'IPtX'. Furthermore, this is Protocol Addressing System that
   represents a Class of Addressing Specifications, which are completely
   Backward Compatible, in nearly every respect, with the IPv4 Addressing
   Specification (See Tables 8 and 11).

   Nevertheless, while the 'IPt1' is the only Protocol, the first addressing
   protocol in this specification, which has complete compatibility with the
   IPv4 specification. The difference between the IPv4 Protocol and the other
   protocols derived from the 'IPtX Specification', is their Addressing
   Schematic, which requires a Different 'Application Program Interface' that
   would used with the 'NIC Driver' to allow Network Cards (NIC) to Bind to
   the Prefixes used in the format describing these Addressing Specifications
   (See Table 11). Needless to say, my suggestion would be, the Development of
   an Application (GUI), which allows the User to direct their communications
   via Continent (Zone IP) and the respective Country / State / Province (IP
   Area Code) of the Recipient.

```
                       TABLE 11

                IPt1 32 Bit Mapped Address Space


                                    CIDR
                 32 Bit IPt1     Network
                | Address Space   |Descriptor|
                +---------------------------+
                | XXX.XXX.XXX.XXX | /XXXX:XX |
                +---------------------------+




                IPt2 64 Bit Mapped Address Space


      Prefix Address <---> (Or Trunk Identifier)                   CIDR
      /      |    /      |    \       \       32 Bit IPt1     Network
   | 8 Bits | 8 Bits | 8 Bits | 8 Bits    | Address Space    |Descriptor
   +---------+---------+---------------------+---------------------------+
   |Reserved:|Reserved:| Zone IP:|IP Area Code:| XXX.XXX.XXX.XXX | /XXXX:XX |
   +---------+---------+---------------------+---------------------------+




                IPt3 96 Bit Mapped Address Space


   Prefix Address Bit Count (Or Trunk Identifier)                CIDR
     /   |               |              \       32 Bit IPt1     Network
   | 8| 8|8 | 8 | 8 |8 |  8 Bits | 8 Bits     | Address Space  |Descriptor
   +--+--+--+--+--+--+---------+-----------+----------------+----------+
   |R:|R:|R:|R:|R:|R:| Zone IP:|IP Area Code:| XXX.XXX.XXX.XXX | /XXXX:XX |
   +--+--+--+--+--+--+---------+-----------+----------------+----------+




                IPt4 128 Bit Mapped Address Space


    Prefix Address Bit Count (Or Trunk Identifier)          IPt1    CIDR
      /       |                  |            \         Address  Network
   | 8| 8|8 |8 | 8| 8|8 |8 |8 |8 |  8 Bits | 8 Bits    | Space |Descriptor
   +--+--+--+--+--+--+--+--+--+--+---------+-----------+-----------------+
   |R:|R:|R:|R:|R:|R:|R:|R:|R:|R:| Zone IP:|IP Area Code:| 32 Bit| /XXXX:XX |
   +--+--+--+--+--+--+--+--+--+--+---------+-----------+-----------------+
```

The Future; which Suggest a Different Reality regarding the Internet and
Networking, using the IPtX Protocol Specification. (Part2)

   The Future of the Internet promises an Always On, for everyone, in a
   Always Connected World. In fact, it will become a necessity for many,
   because there are many devices, using the current technology, which
   would be Medically vital, to sustain life.

   1. Bluetooth Wireless; Transmitting Biorhythms, read from a Biorhythm
      Watch for example, that would monitor a 'Heart Patient', and that
      could Dispatch an Ambulance during an Emergency.

   2. Personal Email, operated from Trunk or Backbone Server (Storage
      Station), transmitted to the Personal Email Server assigned to every
      Personal Intranet-Network. This however, would require a New Email
      Naming Convention, which would allow everyone to always have an email
      address to match their place of residence; e.g.:
      'john.doe@ip area code:zone ip/XXXX:XX', which translates to,
      'john.doe@255:255/00:8'. Where the DNS values could be equivalent
      to (Or actually, would not be necessary, because as long as the
      First and Last Names are Unique the Email would find its' Destination);

              Last Name = Network Address, and
              First Name = host Address

   3. Internet Television and the elimination of the 'Tuner'; while having
      Graphics Superior to 'HDTV', and total Interactive Control. The
      'Internet TV' would see the elimination of the Turner Hardware
      Device, which would still exist in principle. Because instead of
      Changing Channels in Hardware, a person would be Changing IP Addresses,
      which are using Video Streaming to Broadcast almost the same (except for
      the advantages regarding total Interactive Control) TV Broadcasted via
      some Radio Spectrum Frequency. In other words, Changing the Tuner to an
      IP Address Channel could be Free, when broadcasted using only a 32 Bit
      IP Address, and Pay, when using Zone IP and IP Area Code Addresses:
      e.g.; Channel '7' could be 234.44.123.007 for normal Broadcast...And Pay
      Broadcast could be delivered from anywhere in the world, because all
      that would be needed to represent the Channel is the
      'Zone IP: IP Area Code: Network IP Address'.

4. IP Telephoning could use the same Billing Type Structure, which would
      mean either Packaging everything, having only 1 cost, or a substantial
      reduction in the Monthly Phone Bill for the average Consumer.

   5. Networked Personal Automobiles: Every individual having the Control,
      Remote Wireless, over the Locking, Unlocking, Location, and Alarm
      Devices connected to their Automobiles, because it is now a Host on
      their Network. And in the event their Automobile was stolen, the
      Location GPS Code used by their Software would be given to the Police
      to locate their stolen vehicle. And all of these Devices would be
      required, or the Vehicle would not operate, which would prevent any
      disabling of these devices.

   6. Real Time Monitoring of the 'Black Boxes' used by the Airlines to
      Monitor Voice Communications, and Aircraft System Functions.

   7. LNAV: Land Navigation Control System, Devices located on the
      ground, which would provide Navigation Control and Geographical
      Location Information, to free up Satellite Transmissions that could
      be used for: Guidance and Flight Control of Airplanes during
      Emergencies; To provide Communications in Remote areas where
      Cabling is not possible; Airlines Blackbox Monitoring; And to
      provide a Overall Back-up, for the 'Global Wide Emergency
      Broadcast System' (or GWEBS).

   Nevertheless, while these were only examples, they exist as Real World
   Possibilities, because most of the required technology is currently on
   the shelf. Even still, with the implementation of these Protocol
   Specifications, the possibility for living the future, during my life,
   is indeed a possibility today.

Appendix III: Consolidation of Infinity; The Reality of the 2 Tier Base
          Foundation of the 'IPtX' Protocol Family Specification

    The IPtX Protocol Specification represents a Class, or a 'Family' of
    IP Addressing Protocols in total compliance with RFC 1550, which contains
    a Mathematical Series of Addressing Specifications that are completely
    compatible, in nearly every respect, with the IPv4 Addressing
    Specification.

                            Definition 1

    "The IPtX Protocol Specification: An Internet Protocol Telecommunication
    Specification having an Unlimited Size, or Capacity, which equals the
    Number representing the displacement of the 'IP Bit Mapped Address Space'
    that specifies the Size of the Header being used. 'That is, it is the
    Header size, which distinguishes, or can be used to determine the
    particular Addressing Protocol contained within this Family of Addressing
    Protocols that is used to Establish Communications between Networked
    Computers'."

    In other words, this is a Protocol Specification that represents a
    Mathematical Series containing a Class of Protocol Specifications, which
    represents a Numbering System that Increases in 32 Bit Increments, or Some
    Multiple of 32 that is distinguished by the Number Specified, and used in
    place of the 'X' notation (or Variable) specified in the name; 'IPtX'.
    Furthermore, it is important to note, this is Protocol Addressing System
    that offers or provides a gradual and controllable growth, which actually
    represents an Infinite Class of Addressing Specifications that are
    completely Backward Compatible, in nearly every respect, with the IPv4
    IP Addressing System.

    The foundation, or base, which provides the 'IPtX Protocol Family' its
    unprecedented versatility is derived from and built upon the Schematic
    Design of the 'IPt1 and IPt2' Specifications, as depicted in Tables 3
    through 5. While figures 1 through 3 provides an example of the possible
    Header Construction these Specifications could use, (noting specifically
    that the IPt1 specification requires absolutely no change from the
    existing Header Design used in the current IPv4 Specification) and the
    format of the default Addressing structure used in the IPt2 specification.

```
                          Figure 1


                  IP Header for IPv4 and IPt1

   0                      1                      2                      3
   0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
  | VER  |   IHL  | TYPE OF SERVICE  |   TOTAL LENGHT               |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  | IDENTIFICATION                 |FLA|    FRAGMENT OFFSET         |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |   TIME TO LIVE   |  PROTOCOL    |     CHECK SUM HEADER          |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                      SOURCE ADDRESS                            |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                    DESTINATION   ADDRESS                       |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                           OPTIONS                              |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                           DATA                                 |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |----------------------------------------------------------------|


                          Figure 2


                    IP Header for IPt2

   0                      2                      4                      6
   0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2
  | VER No. |   IHL  | TOS & NEXT HEADER |  TL & DIRECTION BIT      |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  | ID & SECURITY BIT |FLA| FRAG OFFSET |:IP PBX Send |/XXXX:XX    |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  | TTL-HOP LIMIT  | PROTOCOL |:IP PBX Recv | CHK SUM | ConfCall   |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  | S1 RESERVED:  | S2 RESERVED:| S  ZONE IP:   | S IP AREA CODE:|
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                      SOURCE ADDRESS                            |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  | D1 RESERVED:  | D2 RESERVED:| D  ZONE IP:   | D IP AREA CODE:|
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                    DESTINATION   ADDRESS                       |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                           OPTIONS                              |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |                           DATA                                 |
  |+ + + + + + + + + + + + + + + + + + + + + + + + + + + + + + + +|
  |----------------------------------------------------------------|
```
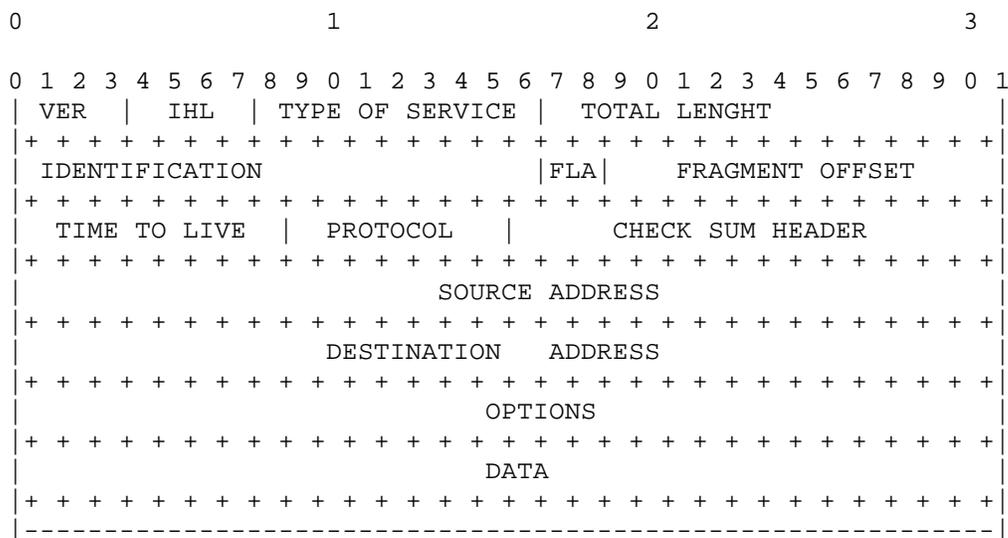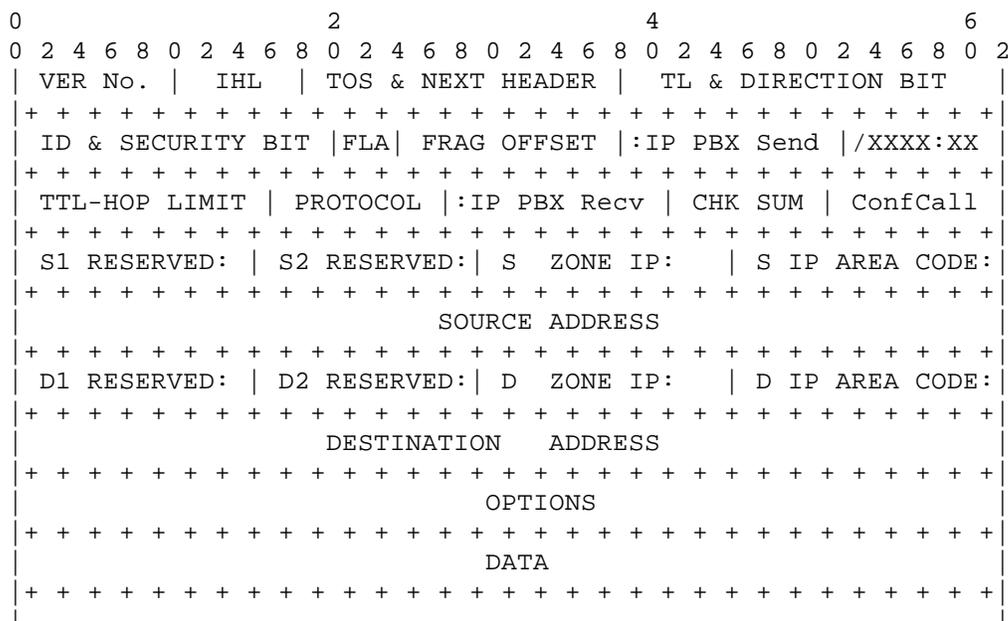
This is a Proposal, an example notwithstanding, whose graphical depiction
is indeed functional. Where by, the TTL and Hop Limit are program
functions related to the Router's Table. And the Security Bit is a 2 Bit
representation of some combination of 01, and 00. Where a '01' in the
first bit tells the Router to route as a Direct Connection, and a '01' in
the second Bit tells the Router that the transmission is Encrypted. While
Type Of Service remains unchanged and Next Header is a '1' Bit indicator,
being either a '01' or a '00'. Nevertheless, while the Total Length
increases to 64 Bits, it can retain this size specification regardless
of size of IP Bit Mapped Address Space, because a Direction Bit of either
a '01' or '00' tells the Router if the Packet is an InterCom or OuterCom
Communication. Furthermore, the Header could also specify not only the
'CIDR Network Descriptor', /XXXX:XX, but it could include the ability to
write the '2' way 'IP PBX Extension' for VVoIP Transmissions, and allow
Conference Calls (ConfCall).

                        FIGURE 3

        'Reality of the IP Addressing Format in the 64 Bit Header'
        'Whose Reserved Addresses would not be apart of the Software
                    Program representing the Header'

1. Source Address Structure: (X.X.X):(X.X.X):256:256:256.256.000.000

2. Destination Address Structure: (X.X.X):(X.X.X):256:256:256.256.000.000

Note*: While the expansion of the IP Address within the Header, is
       incremented in '8 Bit' Segments. The increase in the Total Size
       of the IP Address beyond the Current Header Specifications,
       is accomplished using '32 Bit' increments, which increases the
       overall size of the Header itself. This is, as it should be,
       because it reflects the size of the 'Base IP Addressing Schematic';
       'IPt1'. Thus, preserving the Logic and Mathematical Continuity,
       which is the actual integrity of the System's Foundation, that
       was logically derived from the Mathematics of Quantification.

Nevertheless, perhaps the greatest benefit from using the 'IPtX Specification', is that; 'The Client's Side of this IP Addressing Specification Can Remain Constant, or Limited to only '48 Bits', because the IPtX Protocol Family Actually Represents a '2' Tier Base Configuration. In other words, the 'IPtX Specification' maintains a Base Foundation that contains '2' distinct Parts, which uses 32 Bits in the 'IPt1' Specification (First Base Foundation), and 64 Bits in the 'IPt2' Specification (Second Base Foundation). What this means, is that the 'Second Base Foundation' represents the 'Consolidation of Infinity', which would Limit the Size of the Header Specification to 64 Bits, regardless of the Size that the Protocol Address actually displayed in the 'IP Bit Mapped Address Space' (which is the actual Binary Number representing the Protocol Address). However, the use of this added feature in the 'IPtX Protocol Family Specification' is dependent in part on the Design of the Topology of Internet Backbone, and the IP Address Assigned to the 'Connecting Boundary Router', or Zone (IP) Routers. Which is to say, while the IPtX Protocol Family Specification can be Implemented Without the Internet Backbone Topology having a Hierarchy, (Using only the First Base foundation) without a Hierarchy for the Internet Backbone Topology the Second Base Foundation can not be used.

In other words, what this actually implies Mathematically, is that, the 'Trunk Identifier', or 'Connecting Boundary Router's' Designation could be used to reduced the Size Specified in the Header, because accepting that the IP Address used by the Client, or Network Domain Engineer, actually represents the IP Address used to Connect networked Computers, then All other Bits used in the IP Address could be used to Identify the 'Connecting Boundary Router'. This procedure would result in a 'Router's Designation' that could be specified as consisting of the combination of the Router's 'MAC Address' and the 'Zone IP Address'. An Algorithm used to equate the Remaining Bits to the Router's MAC Address, hence, a reduction in the Size of the Router's IP Bit Mapped Address. Which could also be used to indicate the Location where the 'Connecting Boundary Router' resides within the 'ZONE IP Address Space'. Furthermore, since the 'Connecting Boundary Router' is in fact the Point of 'Demarcation', all other IP Addresses within the 'Zone IP' Address Space (or Internet Protocol t2 Address Space) would Remain Unique. Moreover, if a greater expansion of the IP Bit Mapped Address Space were required, as would be needed to specify the Galaxies and Solar Systems connecting the people in a Universal Networked Community, the entire 64 Bit Address Space in the IPt2 Specification could be used to allow such an expansion. Even still, the 64 Bit IP Bit Mapped Address Space could quite easily represent the maximum size for the Client's Connection, because the 'Connecting Boundary Router' IP Address could actually absorb all of the remaining Bits used

to specify the IP Bit Mapped Address Space.

Needless to say, since the Routing Table specifies Routing between Routers, the 'Consolidation of Infinity' results in a Maximum 64 Bit IP Address Space for the Routers, as well as the Clients.

Table 12

'IPtX Protocol Family'
(Topology of Internet Backbone With Hierarchy)

Addressing Specification		Number Of BITS		Header Size Specification
IPt1	=	32 Bit	=	32 Bit
IPt2	=	64 Bit	=	64 Bit
IPt3	=	96 Bit	=	64 Bit
IPt4	=	128 Bit	=	64 Bit
IPt5	=	160 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt8	=	256 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt12	=	384 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt18	=	576 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt26	=	832 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt32	=	1024 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt57	=	1824 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
IPt64	=	2048 Bit	=	64 Bit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

```
IPt100     =   3,200 Bit    =      64 Bit
  .            .        .          .        .
  .            .        .          .        .
  .            .        .          .        .
IPt5003    = 160,096 Bit   =      64 Bit
  .            .        .          .        .
  .            .        .          .        .
  .            .        .          .        .
IPtX   =  Infinite Number of Bits = 64 Bit
```
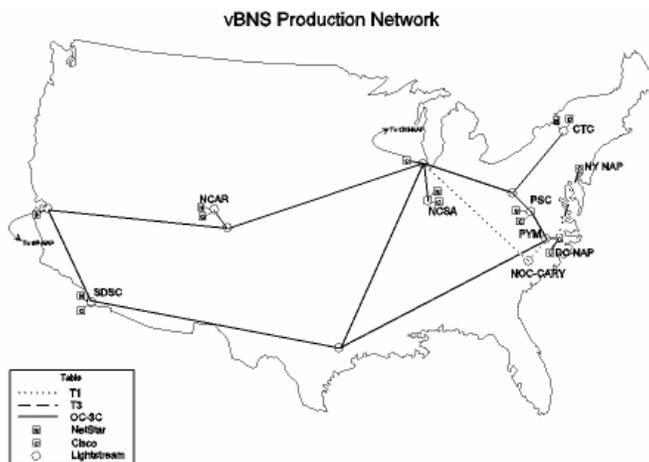

Figure 4-A: Current Internet Backbone
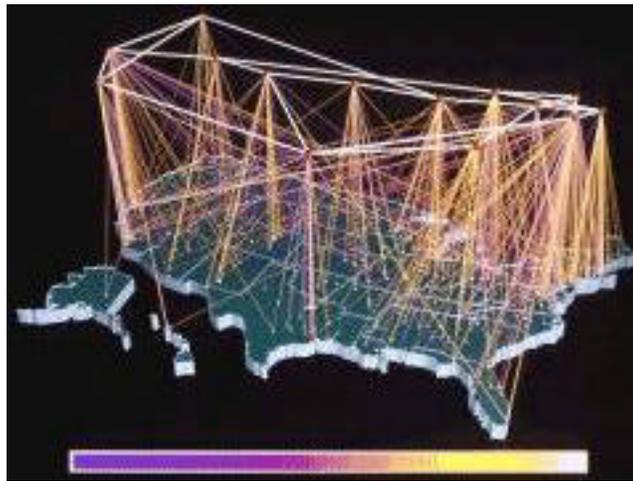
Figure 5-A: NA Zone IP = 001; Backbone Connections

Figure 6-A: Graphical Depiction; NA= Zone IP= 001, Backbone
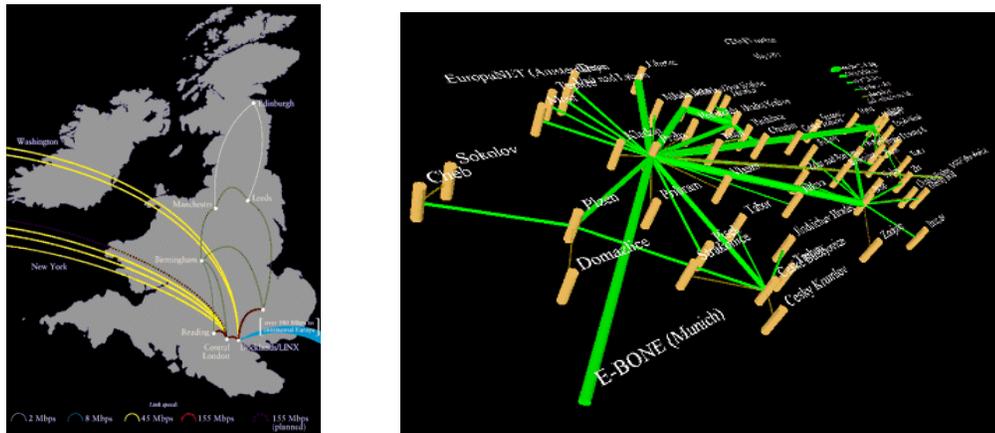
Figure 7-A; EU = Zone IP = 003; Backbone Connections
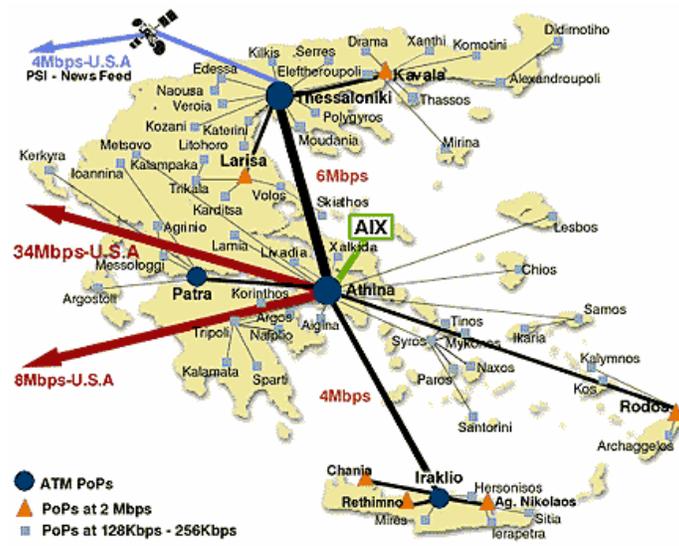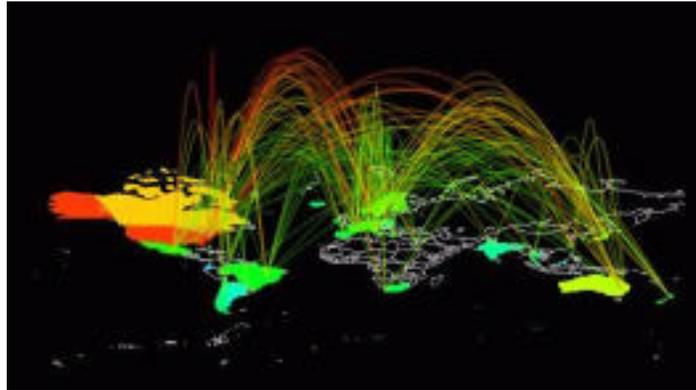
Figure 8-A: The Global Backbone of the World
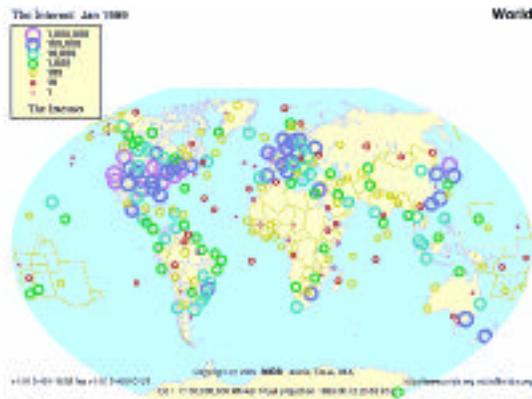
Figure 9-A: The Internet Activity of the World

IPt1 and IPt2 ADDRESS SPACE   October 15, 2002
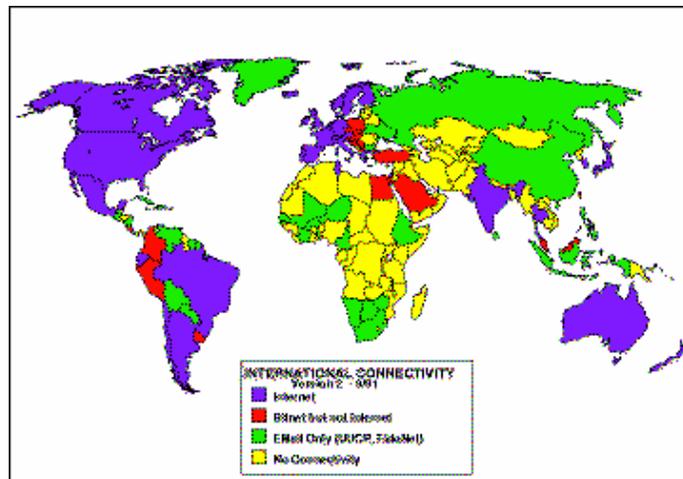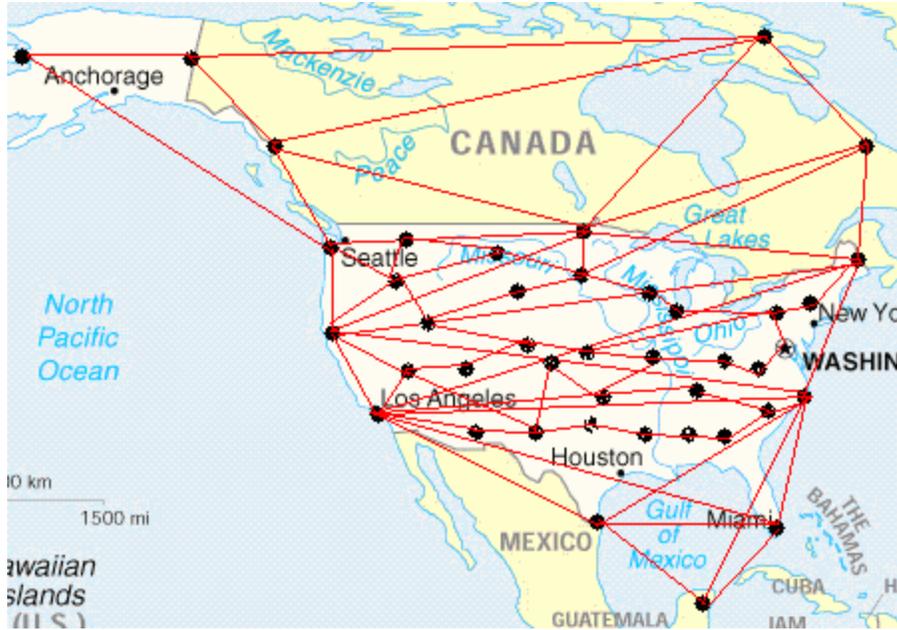
Figure 10-A: NA = Zone IP = 001; Having Multiple Backbone Connections

Black Dot = Zone IP / IP Area Code Router
Red Dot = IP Area Code Address Backbone Connection

Figure 11-A: Different 'IP Area Code' Backbone Connections
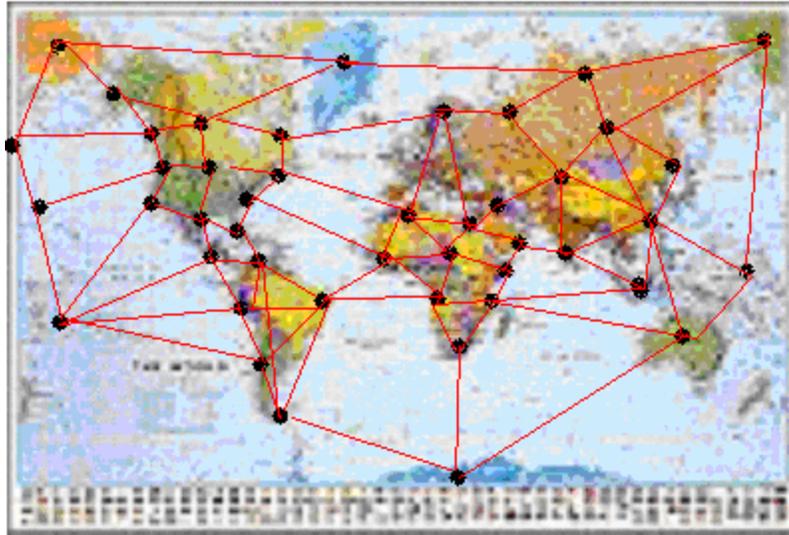
Black Dots = Border Backbone Connections =
Zone IP / IP Area Code = Routers

Figure 12-A: Zone IP = Border Routers
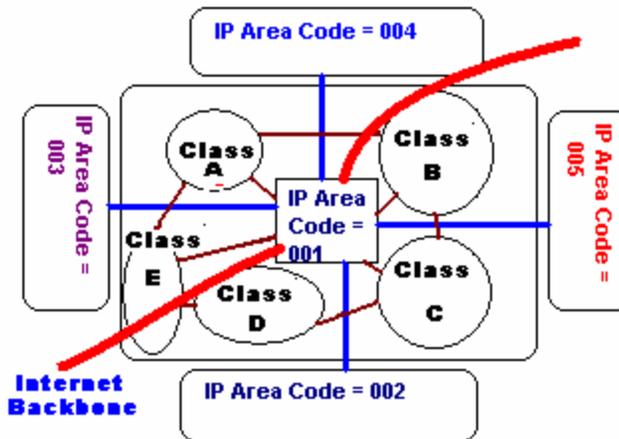
Figure 13-A: Hierarchical Configuration of an IP Area Code Location
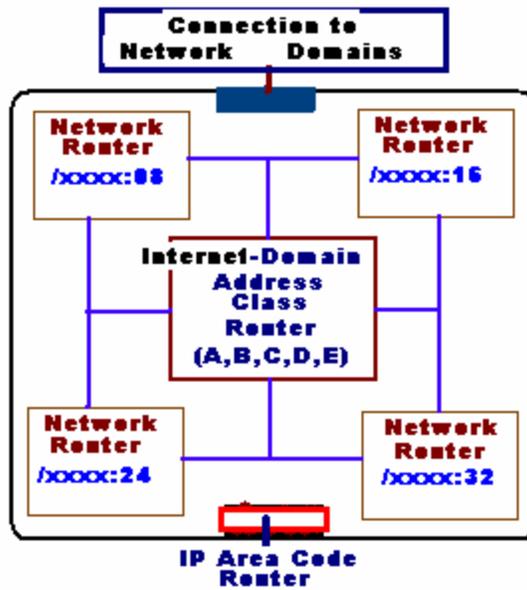
Figure 14-A: Hierarchical Configuration for Network Routing in an IPt1 Address Space
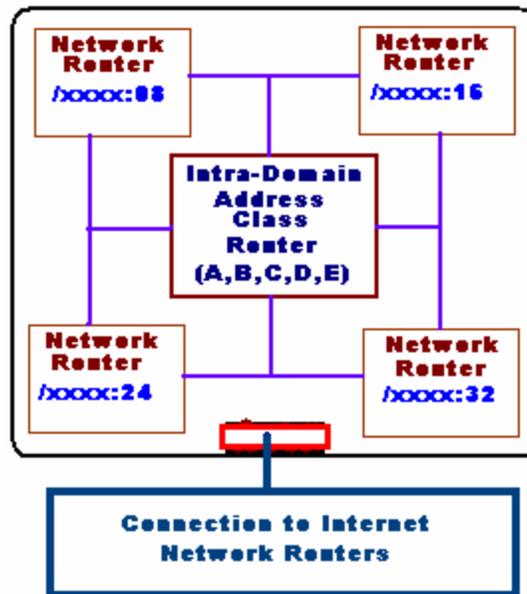
Figure 15-A: Network-Domain configuration

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