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AM3440 In Band Management June 17, 2011

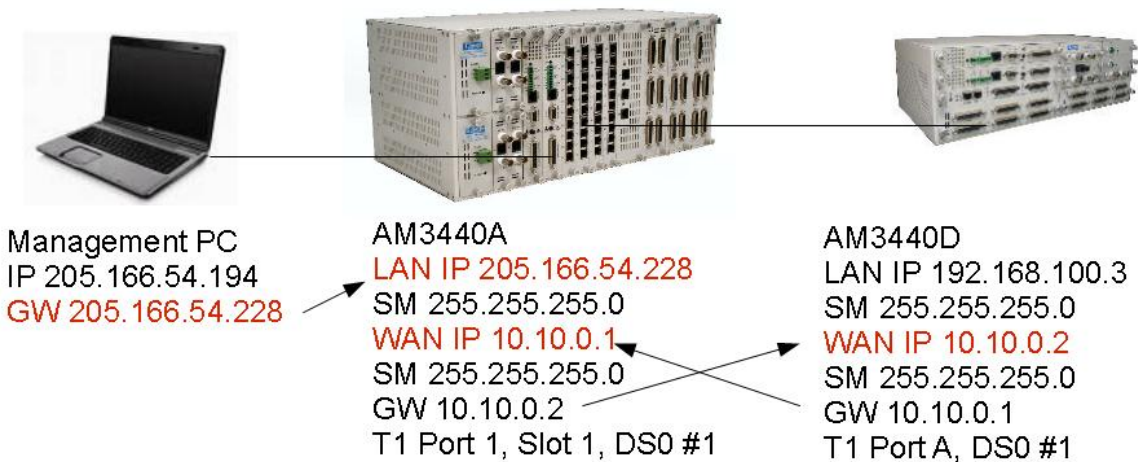
In Band Management Point to Point and Multiple Locations

Point to Point In Band

The AM3440 Controller card is like a terminal server with 2 IP addresses, the LAN address for connections through the Ethernet connector on the front of the card, and a WAN address for connection via DS-0 cross connection. The user can telnet locally to the LAN address of the unit directly connected to the managing PC, or to the WAN address of the remote AM3440.

The remote AM3440 (the AM3440D to the right in the illustration below) does not need a LAN address unless the user wishes to connect via the controller card SNMP Ethernet port at the remote location.

Below is a picture of the point to point link from a Local AM3440 to a remote AM3440. One DS-0 is used over a T1 link between the 2 AM3440's. The DS-0 can be mapped over T1, E1, TDMoE or Fiber Optic cards.



Details of the System Setup page and the mapping for each unit is shown on the following 2 pages.



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Local AM3440 – System Setup – Point to Point In Band

```

LOOP AM3440-A          === System Setup (SYSTEM) ===      14:07:42 06/16/2011
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date      : 14:07:42 06/16/2011
Device Name    : LOOP AM3440-A TEST

[Network]
NI   EN  IPAddress      SubnetMask      Frame      LB Timer
LAN :ON 205.166.054.228 255.255.255.000 Ethernet
WAN :ON 010.010.000.001 255.255.000.000 HDLC      00000001
Gateway Interface: WAN Gateway IPAddr: 010.010.000.002
Inband Uses Slot: 12

[CONSOLE port]
Baud Rate      : 9600
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE
XON_XOFF      : XOFF

[TSI map]                                [Clock]
TSI Function   : 1:1(Bidirection)        Clock Mode    : Normal
Idle Signalling: 1010
  
```

Local AM3440 – Mapping Summary

```

LOOP AM3440-A          === System Configuration (Map) ===  15:18:07 06/16/2011
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Map Number:MAP_1

Slot Number:12   Quad-T1   PO/TS D SL/PO TS   PO/TS D SL/PO TS
Port Number:P1   NON-CAS   =====
                1 1 d IB    1                17 d
                2 d                18 d
                3 d                19 d
  
```



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Remote AM3440 – System Setup – Point to Point In Band

```

LOOP AM3440-A          === System Setup (SYSTEM) ===      15:12:27 06/16/2011
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date      : 15:12:27 06/16/2011
Device Name    : LOOP AM3440-A

[Network]
NI   EN  IPAddress      SubnetMask      Frame      LB Timer
LAN :ON 192.168.100.003 255.255.255.000 Ethernet
WAN :ON 010.010.000.002 255.255.255.000 HDLC      00000001
Gateway Interface: WAN  Gateway IPAddr: 010.010.000.001
Inband Uses Slot: 12
[CONSOLE port]
Baud Rate      : 9600
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE
XON_XOFF      : XOFF

[TSI map]                      [Clock]
TSI Function   : 1:1(Bidirection)  Clock Mode    : Normal
Idle Signalling: 1010
  
```

Remote AM3440 – Mapping Summary

```

LOOP AM3440-A          === System Configuration (Map) ===  14:13:04 06/16/2011
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Map Number:MAP_1

Slot Number:12   Quad-T1   PO/TS D SL/PO TS   PO/TS D SL/PO TS
Port Number:P1   NON-CAS   =====
                1 1 d IB    1              17 d
                2 d              18 d
                3 d              19 d
  
```



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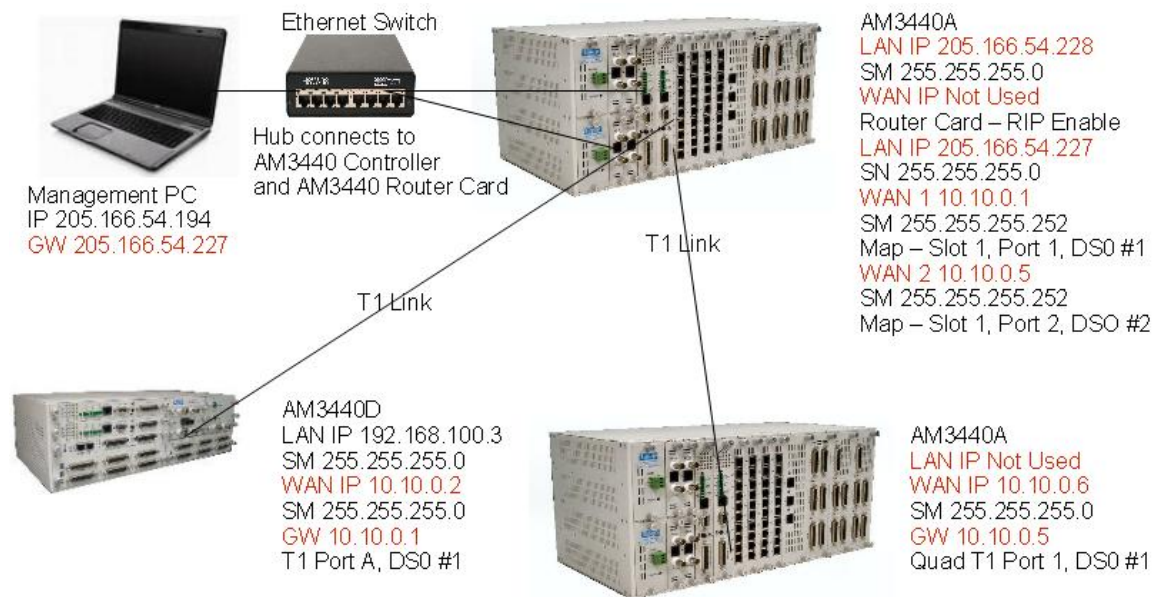
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AM3440 In Band Local Site to 2 Remote Sites Using Host Router Card

The section illustrates connecting a local host site to several remote locations for in band management. At the local host site, there is an Ethernet switch external to the AM3440 and a router card in the AM3440.

The Ethernet switch connects to the managing PC, the SNMP Ethernet port of the AM3440, and to the router card in the AM3440.

The router card is needed only at the host end in this application. The host end router DS-0s are mapped to T1 time slots, and at the remote end, the DS-0 time slots are mapped directly to the WAN ports of the controller cards. No need for a router at the remote end.





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Local Site with Router Card – System Setup – Local to 2 Remote Sites

```

LOOP AM3440-A          === System Setup (SYSTEM) ===          14:51:40 06/24/2011
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date      : 14:51:41 06/24/2011
Device Name    : LOOP AM3440-A TEST

[Network]
NI   EN  IPAddress      SubnetMask      Frame      LB Timer
LAN :ON 205.166.054.228 255.255.255.000 Ethernet
WAN :ON 000.000.000.000 000.000.000.000 HDLC      00000001
Gateway Interface: LAN   Gateway IPAddr: 000.000.000.000
Inband Uses Slot: D
[CONSOLE port]
Baud Rate      : 9600
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE
XON_XOFF       : XOFF

[TSI map]                      [Clock]
TSI Function    : 1:1(Bidirection)  Clock Mode     : Normal
Idle Signalling: 1010
  
```

Local Site - Router Card (RT version card) Port System Setup

```

SLOT B  RTR LAN/WAN === Port System(LAN1-WAN16) Setup === 14:48:55 06/24/2011
ARROW KEYS: CURSOR MOVE, Please Input: nnn.nnn.nnn.nnn, BACKSPACE to edit

NI      IPAddress      SubnetMask      Frame      RIP_I  RIP_II  Mode
LAN1    205.166.054.227 255.255.255.000 ETHERNET  DISABLE ENABLE  ROUTE
LAN2    000.000.000.000 000.000.000.000 ETHERNET  DISABLE DISABLE ROUTE
WAN1    010.010.000.001 255.255.255.252 HDLC      DISABLE ENABLE  ROUTE
WAN2    010.010.000.005 255.255.255.252 HDLC      DISABLE ENABLE  ROUTE
  
```

Local Site - Router Card Port DS0 Map Setup

```

SLOT B  RTR LAN/WAN === Port DS0 MAP Setup ===          14:49:20 06/24/2011
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

TimeSlot WANPort      TimeSlot WANPort
TS1   : WAN1          TS17  : Idle
TS2   : WAN2          TS18  : Idle
TS3   : Idle          TS19  : Idle
TS4   : Idle          TS20  : Idle
  
```



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Local Site – Mapping Summary

```
LOOP AM3440-A      === System Configuration (Map) ===      14:51:11 06/24/2011
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Map Number:MAP_1
```

Slot Number: B	RTR	PO/TS	D	SL/PO	TS	PO/TS	D	SL/PO	TS
Port Number:		=====		=====		=====		=====	
		1 d		1 1	1	17 d			
		2 d		1 2	1	18 d			
		3 d				19 d			
		4 d				20 d			

Remote Site 1 - System Setup

```
LOOP AM3440-D      === System Setup (SYSTEM) ===          15:03:09 06/24/2011
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date       : 15:03:09 06/24/2011
Device Name     : LOOP AM3440-D
```

```
[Network]
NI  EN  IPAddress      SubnetMask      Frame      LB Timer
LAN :ON 192.168.100.003 255.255.255.000 Ethernet
WAN :ON 010.010.000.002 255.255.255.000 HDLC      00000001
Gateway Interface: WAN Gateway IPAddr: 010.010.000.001
```

```
[CONSOLE port]
Baud Rate      : 9600
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE
XON_XOFF      : XOFF
```

```
[TSI map] [Clock]
TSI Function   : 1:1(Bidirection) Clock Mode    : Normal
Idle Signalling: 1010
```

Remote Site 1 – Mapping Summary

```
LOOP AM3440-D      === System Configuration (Map) ===      15:04:38 06/24/2011
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Map Number:MAP_1
```

Slot Number: A	T1	PO/TS	D	SL/PO	TS	PO/TS	D	SL/PO	TS
Port Number:	NON-CAS	=====		=====		=====		=====	
		1 d		IB	1	17 d			
		2 d				18 d			



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Remote Site 2 – System Setup

Note that at this site there is no LAN port IP address assigned. One could be. In the case below, someone at the site would use a serial port to access the management. If the AM3440 at the remote site must be managed by local telnet or remotely managed by an external IP/Ethernet link that is NOT in band, then an IP address is necessary for the LAN port.

```

LOOP AM3440-A          === System Setup (SYSTEM) ===          16:02:55 06/24/2011
ARROW KEYS: CURSOR MOVE, Please Input: hh:mm:ss mm/dd/yyyy, BACKSPACE to edit
[System]
Time/Date      : 16:02:55 06/24/2011
Device Name    : LOOP AM3440-A

[Network]
NI   EN  IPAddress      SubnetMask      Frame      LB Timer
LAN  :OFF 000.000.000.000 000.000.000.000 Ethernet
WAN  :ON  010.010.000.006 255.255.255.000 HDLC      00000001
Gateway Interface: WAN  Gateway IPAddr: 010.010.000.005
Inband Uses Slot: D
[CONSOLE port]
Baud Rate      : 9600
Data Length    : 8-Bits
Stop Bit       : 1-Bit
Parity         : NONE
XON_XOFF      : XOFF

[TSI map]                                [Clock]
TSI Function   : 1:1(Bidirection)        Clock Mode    : Normal
Idle Signalling: 1010
  
```

Remote Site 2 – Mapping Summary

```

LOOP AM3440-A          === System Configuration (Map) ===      16:03:55 06/24/2011
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
Map Number:MAP_1

Slot Number: 1      Quad-T1      PO/TS D SL/PO TS      PO/TS D SL/PO TS
Port Number:P1     NON-CAS      =====
                1 1 d IB      1      17 d
                2 d                18 d
  
```

Notes:

- For further down stream in band management, DS-0s can be passed from T1 to T1.
- If an SNMP manager is used, up to 4 AM3440 chassis can be managed over a single DS-0 when concentrating traffic back to the host site.
- This document shows subnets with only 2 useable addresses for the one to many in band management. The .252 subnet provides 4 addresses, 2 useable. For example, 0, 1, 2, and 3 are 4 addresses, 1 and 2 are useable. For addresses 4, 5, 6 and 7, 5 and 6 are useable. For reference regarding subnet addressing, RFC 1878 is on the following pages of this document.



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Network Working Group
Request for Comments: 1878
Obsoletes: 1860
Category: Informational

T. Pummill
Alantec
B. Manning
ISI
December 1995

Variable Length Subnet Table For IPv4

Status of this Memo

This memo provides information for the Internet community. This memo does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Abstract

This memo clarifies issues surrounding subnetting IP networks by providing a standard subnet table. This table includes subnetting for Class A, B, and C networks, as well as Network IDs, host ranges and IP broadcast addresses with emphasis on Class C subnets.

This memo is intended as an informational companion to Subnetting RFC [1] and the Hosts Requirements RFC [2].

Introduction

The growth of networking since the time of STD 5, RFC 950 and STD 3, RFC 1123 has resulted in larger and more complex network subnetting. The previously mentioned RFCs comprise the available guidelines for creating subnetted networks, however they have occasionally been misinterpreted leading to confusion regarding proper subnetting.

This document itemizes the potential values for IPv4 subnets. Additional information is provided for Hex and Decmial values, classfull equivalants, and number of addresses available within the indicated block.



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RFC 1878

Subnet Table

December 1995

Table

The following table lists the variable length subnets from 1 to 32, the CIDR [3] representation form (/xx) and the Decimal equivalents. (M = Million, K=Thousand, A,B,C= traditional class values)

Mask value:			# of	
Hex	CIDR	Decimal	addresses	Classfull
80.00.00.00	/1	128.0.0.0	2048 M	128 A
C0.00.00.00	/2	192.0.0.0	1024 M	64 A
E0.00.00.00	/3	224.0.0.0	512 M	32 A
F0.00.00.00	/4	240.0.0.0	256 M	16 A
F8.00.00.00	/5	248.0.0.0	128 M	8 A
FC.00.00.00	/6	252.0.0.0	64 M	4 A
FE.00.00.00	/7	254.0.0.0	32 M	2 A
FF.00.00.00	/8	255.0.0.0	16 M	1 A
FF.80.00.00	/9	255.128.0.0	8 M	128 B
FF.C0.00.00	/10	255.192.0.0	4 M	64 B
FF.E0.00.00	/11	255.224.0.0	2 M	32 B
FF.F0.00.00	/12	255.240.0.0	1024 K	16 B
FF.F8.00.00	/13	255.248.0.0	512 K	8 B
FF.FC.00.00	/14	255.252.0.0	256 K	4 B
FF.FE.00.00	/15	255.254.0.0	128 K	2 B
FF.FF.00.00	/16	255.255.0.0	64 K	1 B
FF.FF.80.00	/17	255.255.128.0	32 K	128 C
FF.FF.C0.00	/18	255.255.192.0	16 K	64 C
FF.FF.E0.00	/19	255.255.224.0	8 K	32 C
FF.FF.F0.00	/20	255.255.240.0	4 K	16 C
FF.FF.F8.00	/21	255.255.248.0	2 K	8 C
FF.FF.FC.00	/22	255.255.252.0	1 K	4 C
FF.FF.FE.00	/23	255.255.254.0	512	2 C
FF.FF.FF.00	/24	255.255.255.0	256	1 C
FF.FF.FF.80	/25	255.255.255.128	128	1/2 C
FF.FF.FF.C0	/26	255.255.255.192	64	1/4 C
FF.FF.FF.E0	/27	255.255.255.224	32	1/8 C
FF.FF.FF.F0	/28	255.255.255.240	16	1/16 C
FF.FF.FF.F8	/29	255.255.255.248	8	1/32 C
FF.FF.FF.FC	/30	255.255.255.252	4	1/64 C
FF.FF.FF.FE	/31	255.255.255.254	2	1/128 C
FF.FF.FF.FF	/32	255.255.255.255	This is a single host route	



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RFC 1878

Subnet Table

December 1995

Subnets and Networks

The number of available network and host addresses are derived from the number of bits used for subnet masking. The tables below depict the number of subnetting bits and the resulting network, broadcast address, and host addresses. Please note that all-zeros and all-ones subnets are included in Tables 1-1 and 1-2 per the current, standards- based practice for using all definable subnets [4].

Table 1-1 represents traditional subnetting of a Class B network address.

Subnet Mask Bits of Subnet	# of nets hosts/subnet	Net. Addr.	Host Addr Range	Broadcast Addr.
255.255.128.0 1 bit subnet	2 nets	N.N.0.0	N.N.0-127.N	N.N.127.255
	32766	N.N.128.0	N.N.128-254.N	N.N.254.255
255.255.192.0 2 bit subnet	4 nets 16382	N.N.0.0	N.N.0-63.N	N.N.63.255
		N.N.64.0	N.N.64-127.N	N.N.127.255
		N.N.128.0	N.N.128-191.N	N.N.191.255
		N.N.192.0	N.N.192-254.N	N.N.254.255
255.255.224.0 3 bit subnet	8 nets 8190	N.N.0.0	N.N.0-31.N	N.N.31.255
		N.N.32.0	N.N.32-63.N	N.N.63.255
		N.N.64.0	N.N.64-95.N	N.N.95.255
		N.N.96.0	N.N.96-127.N	N.N.127.255
		N.N.128.0	N.N.128-159.N	N.N.159.255
		N.N.160.0	N.N.160-191.N	N.N.191.255
		N.N.192.0	N.N.192-223.N	N.N.223.255
		N.N.224.0	N.N.224-254.N	N.N.254.255
255.255.240.0 4 bit subnet	16 nets 4094	N.N.0.0	N.N.0-15.N	N.N.15.255
		N.N.16.0	N.N.16-31.N	N.N.31.255
		N.N.32.0	N.N.32-47.N	N.N.47.255
		N.N.48.0	N.N.48-63.N	N.N.63.255
		N.N.64.0	N.N.64-79.N	N.N.79.255
		N.N.80.0	N.N.80-95.N	N.N.95.255
		N.N.96.0	N.N.96-111.N	N.N.111.255
		N.N.112.0	N.N.112-127.N	N.N.127.255
		N.N.128.0	N.N.128-143.N	N.N.143.255
		N.N.144.0	N.N.144-159.N	N.N.159.255
		N.N.160.0	N.N.160-175.N	N.N.175.255
		N.N.176.0	N.N.176-191.N	N.N.191.255
		N.N.192.0	N.N.192-207.N	N.N.207.255
		N.N.208.0	N.N.208-223.N	N.N.223.255
		N.N.224.0	N.N.224-239.N	N.N.239.255
		N.N.240.0	N.N.240-254.N	N.N.254.255

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[Page 3]



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RFC 1878

Subnet Table

December 1995

255.255.248.0 32 nets
 5 bit subnet 2046

N.N.0.0	N.N.0-7.N	N.N.7.255
N.N.8.0	N.N.8-15.N	N.N.15.255
N.N.16.0	N.N.16-23.N	N.N.23.255
N.N.24.0	N.N.24-31.N	N.N.31.255
N.N.32.0	N.N.32-39.N	N.N.39.255
N.N.40.0	N.N.40-47.N	N.N.47.255
N.N.48.0	N.N.48-55.N	N.N.55.255
N.N.56.0	N.N.56-63.N	N.N.63.255
N.N.64.0	N.N.64-71.N	N.N.71.255
N.N.72.0	N.N.72-79.N	N.N.79.255
N.N.80.0	N.N.80-87.N	N.N.87.255
N.N.88.0	N.N.88-95.N	N.N.95.255
N.N.96.0	N.N.96-103.N	N.N.103.255
N.N.104.0	N.N.104-111.N	N.N.111.255
N.N.112.0	N.N.112-119.N	N.N.119.255
N.N.120.0	N.N.120-127.N	N.N.127.255
N.N.128.0	N.N.128-135.N	N.N.135.255
N.N.136.0	N.N.136-143.N	N.N.143.255
N.N.144.0	N.N.144-151.N	N.N.151.255
N.N.152.0	N.N.152-159.N	N.N.159.255
N.N.160.0	N.N.160-167.N	N.N.167.255
N.N.168.0	N.N.168-175.N	N.N.175.255
N.N.176.0	N.N.176-183.N	N.N.183.255
N.N.184.0	N.N.184-191.N	N.N.191.255
N.N.192.0	N.N.192-199.N	N.N.199.255
N.N.200.0	N.N.200-207.N	N.N.207.255
N.N.208.0	N.N.208-215.N	N.N.215.255
N.N.216.0	N.N.216-223.N	N.N.223.255
N.N.224.0	N.N.224-231.N	N.N.231.255
N.N.232.0	N.N.232-239.N	N.N.239.255
N.N.240.0	N.N.240-247.N	N.N.247.255
N.N.248.0	N.N.248-254.N	N.N.254.255

255.255.252.0 64 nets
 6 bit subnet 1022

N.N.0.0	N.N.0-3.N	N.N.3.255
N.N.4.0	N.N.4-7.N	N.N.7.255
N.N.8.0	N.N.8-11.N	N.N.11.255
N.N.12.0	N.N.12-15.N	N.N.15.255
N.N.240.0	N.N.240-243.N	N.N.243.255
N.N.244.0	N.N.244-247.N	N.N.247.255
N.N.248.0	N.N.248-251.N	N.N.251.255
N.N.252.0	N.N.252-254.N	N.N.254.255

255.255.254.0 128 nets
 7 bit subnet 510

N.N.0.0	N.N.0-1.N	N.N.1.255
N.N.2.0	N.N.2-3.N	N.N.3.255
N.N.4.0	N.N.4-5.N	N.N.5.255
N.N.250.0	N.N.250-251.N	N.N.251.255
N.N.252.0	N.N.252-253.N	N.N.253.255

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[Page 4]



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RFC 1878		Subnet Table		December 1995
		N.N.254.0	N.N.254.N	N.N.254.255
255.255.255.0	255 nets	N.N.0.0	N.N.0.N	N.N.0.255
8 bit subnet	253	N.N.1.0	N.N.1.N	N.N.1.255
		N.N.252.0	N.N.252.N	N.N.252.255
		N.N.253.0	N.N.253.N	N.N.253.255
		N.N.254.0	N.N.254.N	N.N.254.255

Table 1-2 represents traditional subnetting of a Class C network address (which is identical to extended Class B subnets).

Subnet Mask	# of nets	Net. Addr.	Host Addr Range	Broadcast Addr.
Bits of Subnet	hosts/subnet			
255.255.255.128	2 nets	N.N.N.0	N.N.N.1-126	N.N.N.127
1 bit Class C	126	N.N.N.128	N.N.N.129-254	N.N.N.255
9 bit Class B				
255.255.255.192	4 nets	N.N.N.0	N.N.N.1-62	N.N.N.63
2 bit Class C	62	N.N.N.64	N.N.N.65-126	N.N.N.127
10 bit Class B		N.N.N.128	N.N.N.129-190	N.N.N.191
		N.N.N.192	N.N.N.193-254	N.N.N.255
255.255.255.224	8 nets	N.N.N.0	N.N.N.1-30	N.N.N.31
3 bit Class C	30	N.N.N.32	N.N.N.33-62	N.N.N.63
11 bit Class B		N.N.N.64	N.N.N.65-94	N.N.N.95
		N.N.N.96	N.N.N.97-126	N.N.N.127
		N.N.N.128	N.N.N.129-158	N.N.N.159
		N.N.N.160	N.N.N.161-190	N.N.N.191
		N.N.N.192	N.N.N.193-222	N.N.N.223
		N.N.N.224	N.N.N.225-254	N.N.N.255
255.255.255.240	16 nets	N.N.N.0	N.N.N.1-14	N.N.N.15
4 bit Class C	14	N.N.N.16	N.N.N.17-30	N.N.N.31
12 bit Class B		N.N.N.32	N.N.N.33-46	N.N.N.47
		N.N.N.48	N.N.N.49-62	N.N.N.63
		N.N.N.64	N.N.N.65-78	N.N.N.79
		N.N.N.80	N.N.N.81-94	N.N.N.95
		N.N.N.96	N.N.N.97-110	N.N.N.111
		N.N.N.112	N.N.N.113-126	N.N.N.127
		N.N.N.128	N.N.N.129-142	N.N.N.143
		N.N.N.144	N.N.N.145-158	N.N.N.159
		N.N.N.160	N.N.N.161-174	N.N.N.175
		N.N.N.176	N.N.N.177-190	N.N.N.191
		N.N.N.192	N.N.N.193-206	N.N.N.207

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[Page 5]



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Subnet Table

December 1995

N.N.N.208	N.N.N.209-222	N.N.N.223
N.N.N.224	N.N.N.225-238	N.N.N.239
N.N.N.240	N.N.N.241-254	N.N.N.255

255.255.255.248 32 nets
 5 bit Class C 6
 13 bit Class B

N.N.N.0	N.N.N.1-6	N.N.N.7
N.N.N.8	N.N.N.9-14	N.N.N.15
N.N.N.16	N.N.N.17-22	N.N.N.23
N.N.N.24	N.N.N.25-30	N.N.N.31
N.N.N.32	N.N.N.33-38	N.N.N.39
N.N.N.40	N.N.N.41-46	N.N.N.47
N.N.N.48	N.N.N.49-54	N.N.N.55
N.N.N.56	N.N.N.57-62	N.N.N.63
N.N.N.64	N.N.N.65-70	N.N.N.71
N.N.N.72	N.N.N.73-78	N.N.N.79
N.N.N.80	N.N.N.81-86	N.N.N.87
N.N.N.88	N.N.N.89-94	N.N.N.95
N.N.N.96	N.N.N.97-102	N.N.N.103
N.N.N.104	N.N.N.105-110	N.N.N.111
N.N.N.112	N.N.N.113-118	N.N.N.119
N.N.N.120	N.N.N.121-126	N.N.N.127
N.N.N.128	N.N.N.129-134	N.N.N.135
N.N.N.136	N.N.N.137-142	N.N.N.143
N.N.N.144	N.N.N.145-150	N.N.N.151
N.N.N.152	N.N.N.153-158	N.N.N.159
N.N.N.160	N.N.N.161-166	N.N.N.167
N.N.N.168	N.N.N.169-174	N.N.N.175
N.N.N.176	N.N.N.177-182	N.N.N.183
N.N.N.184	N.N.N.185-190	N.N.N.191
N.N.N.192	N.N.N.193-198	N.N.N.199
N.N.N.200	N.N.N.201-206	N.N.N.207
N.N.N.208	N.N.N.209-214	N.N.N.215
N.N.N.216	N.N.N.217-222	N.N.N.223
N.N.N.224	N.N.N.225-230	N.N.N.231
N.N.N.232	N.N.N.233-238	N.N.N.239
N.N.N.240	N.N.N.241-246	N.N.N.247
N.N.N.248	N.N.N.249-254	N.N.N.255

255.255.255.252 64 nets
 6 bit Class C 2
 14 bit Class B

N.N.N.0	N.N.N.1-2	N.N.N.3
N.N.N.4	N.N.N.5-6	N.N.N.7
N.N.N.8	N.N.N.9-10	N.N.N.11
N.N.N.244	N.N.N.245-246	N.N.N.247
N.N.N.248	N.N.N.249-250	N.N.N.251
N.N.N.252	N.N.N.253-254	N.N.N.255



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Subnet Table

December 1995

For the sake of completeness within this memo, tables 2-1 and 2-2 illustrate some options for subnet/host partitions within selected block sizes using calculations which exclude all-zeros and all-ones subnets [2]. Many vendors only support subnetting based upon this premise. This practice is obsolete! Modern software will be able to utilize all definable networks.

Table 2-1 from a /16 block

# bits	Mask	Effective Subnets	Effective Hosts
=====	=====	=====	=====
2	255.255.192.0	2	16382
3	255.255.224.0	6	8190
4	255.255.240.0	14	4094
5	255.255.248.0	30	2046
6	255.255.252.0	62	1022
7	255.255.254.0	126	510
8	255.255.255.0	254	254
9	255.255.255.128	510	126
10	255.255.255.192	1022	62
11	255.255.255.224	2046	30
12	255.255.255.240	4094	14
13	255.255.255.248	8190	6
14	255.255.255.252	16382	2

Table 2-2 from a /24 block

# bits	Mask	Effective Subnets	Effective Hosts
=====	=====	=====	=====
2	255.255.255.192	2	62
3	255.255.255.224	6	30
4	255.255.255.240	14	14
5	255.255.255.248	30	6
6	255.255.255.252	62	2

*Subnet all zeroes and all ones excluded. (Obsolete)

*Host all zeroes and all ones excluded. (Obsolete)



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Subnet Table

December 1995

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Security Considerations

Security issues are not discussed in this memo.

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[Page 8]