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## AppleTalk Phase 2: Network Numbers, Nodes, and Zones

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TOPIC -----

I have some questions about AppleTalk Phase 2. The material I have read states that AppleTalk Phase 2 will provide for:

- 1) 65,534 possible network numbers
- 2) 16 million nodes
- 3) 256 zones per network
- 4) 1,024 networks per Internet

How were these numbers arrived at?

DISCUSSION -----

1) Network numbers are defined by a 16-bit number:  $2^{16} = 65,536$ . The network number 0 is reserved to mean unknown, and network number 65,535 is reserved for future use. This means a total of 65,534 networks are possible.

2) AppleTalk Phase 1 supported  $2^8$  nodes minus the reserved nodes, ID 0 and ID 255, which resulted in a total 254 nodes possible. AppleTalk Phase 2 nodes on the physical network are identified by their virtual network number and their 8-bit node ID. The node IDs of 0, 254, and 255 are reserved in AppleTalk Phase 2.

Because it is possible to have 65,534 networks with 253 nodes in each network, it is possible to have a maximum of 16,580,102 nodes ( $65,534 * 253 = 16,580,102$ ). Note: Network numbers 65,280 through 65,534 are used only when a router is not present.

3) Actually, the maximum number of physical zones per network is 255. This is an architectural limitation of AppleTalk Phase 2. The AppleTalk Internet Router supports a maximum of 255 names on a single zone list. The reason for 255 is because the zone list may apply to a single physical network.

Also, an AppleTalk Phase 2 internet (1 or more physical networks connected together via routers) is capable of supporting more than 256 zones. But

the AppleTalk Internet Routers supports a maximum of 256 zones on an internet.

- 4) There can be a maximum of 1,024 entries in the routing table for the AppleTalk Internet Router. Each entry can refer to an individual network number or a range of network numbers. This limitation is not AppleTalk Phase 2-specific.

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