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## AppleTalk: Node IDs, Node Hints

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TOPIC -----

I have a large AppleTalk Internet. Using NodeHint by Farallon, I am able to assign node numbers to each workstation, allowing some control over the network. Is there a way to assign node IDs to AppleTalk printers, either by using the same method or another method?

DISCUSSION -----

The node hint is stored in the PRAM of the Macintosh computer. There is no method that we are aware of (as of November 1989) for assigning node hints for AppleTalk-based printers.

Also, using NodeHint to assign node numbers does not guarantee that the workstation will actually have node number assigned in PRAM. See the following for a detailed description of the node number assignment process:

Operation without a router  
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If a node has a hint stored in parameter RAM, the node uses the AppleTalk Address Resolution Protocol (AARP) to determine if the address is still unique. If the address is unique, the node can begin communicating on the network. If the address is not unique, the node continues as if it had no hint.

When a node doesn't have a hint node address stored in parameter RAM, the node determines its address by first determining its network number, the first 16 bits of its node address. In the absence of a router, the node picks a network number from the startup range. This range is specified as 65,280 to 65,534 (\$FF00 to \$FFFE).

A node then picks a node ID in the 0 to 253 (\$00 to \$FD) range. As in the past, a node ID of 0 is reserved to mean "send to myself", and 255 is reserved for broadcasts. With AppleTalk Phase 2, 254 is also reserved for internal use.

The node now has an node address in the form \$FFxxyy, where xx is the last part of the network number, and yy is the node ID. The node uses AARP to determine if any other nodes on the network are already using that node address. If no other nodes are using it, then the node adopts that as its node address.

Otherwise, it tries a different node address.

#### Operation with a router

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When a network administrator sets up a router, a network number range is specified for an extended AppleTalk network. The numbers in this range must be unique on the Internet. The network administrator also specifies a list of zone names that are valid for the extended network. As in the past, a router can depend on a seed router for the authoritative definition of network numbers and zone names.

When a router is present, an AppleTalk Phase 2 workstation node determines its node address in two steps. In the first step, the workstation establishes a potential temporary node address for communicating with a router. If the workstation has no hint to use, then it uses a number in the startup range and uses AARP until it finds a unique address.

If the workstation has been on an AppleTalk network previously, then it uses its hint node address and uses AARP to determine if that node address is still unique. If it isn't unique, then the workstation tries other node IDs with the same network number. If the workstation still can't find a unique address, it tries a network number in the startup range.

In the second step, a workstation uses its potentially temporary node address and proceeds to talk to the router to discover information about its environment. It learns from the router the range of valid network numbers for the cable and confirms that its saved zone name is valid for that cable.

If a node determines that its zone name is not valid, or it does not have a saved zone name, it can ask the router for the list of valid zone names and the name of the default zone. The software can allow the user to choose a zone name from the list of valid zone names. EtherTalk and TokenTalk software support this feature. Until the user goes into the Control Panel and chooses a zone, the node is in the default zone.  
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