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AppleTalk: Zones and Multicast Addressing Questions & Answers

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TOPIC -----

Here are some questions and answers about AppleTalk zones and multicast addressing.

DISCUSSION -----

- Q) How do machines that reside in the same zone know how to communicate with other machines?
- A) Macintosh-to-Macintosh communication, such as transferring a file from a workstation to a file server, does not have anything to do with zones. The workstation knows the network number and node address of the file server and can send packets directly or through a router to the file server and vice versa.
- Q) I've heard about a name table that is used with zone multicasting. Where does that table reside, and who maintains it? Does the router or the workstation maintain it?
- A) Extended AppleTalk Phase 2 networks (EtherTalk 2.0 and TokenTalk 2.0) can have several zones defined for a single physical cable. When a user selects the zone that he wants his machine associated with, a multicast address for that zone is added to the hash table of multicast addresses that the Macintosh accepts. The hash table is maintained on the network adapter NuBus card.
- Q) Who assigns the zone multicast address, and where is it done?
- A) The multicast address for a particular zone is extrapolated from the zone name itself and is done by an AppleTalk Phase 2-compatible router on the extended AppleTalk Phase 2 network. A checksum algorithm is used by ZIP (Zone Information Protocol) to convert the zone name into a multicast address and is returned to nodes, with the multicast address for the zone that the node has selected, on the Internet through a GetNetInfo reply

packet by the router.

Q) If I have two machines on Ethernet that are in the same logical zone and one is near the router and one is 300 meters away from the router, how do these nodes interact and not cause excessive traffic on the network? What happens if the two machines are on different networks (for example, Token Ring and Ethernet)?

A) See the first answer above. No extra packet traffic is generated.

Additional Information

A zone on an extended AppleTalk Phase 2 Internet is an arbitrary subset of the AppleTalk nodes on the Internet. A particular network can contain nodes belonging to any number of zones. The zone list and network number range for a particular extended AppleTalk Phase 2 network (physical cable) is maintained by routers. Nodes choose their zone from a list of zones available for their network.

The only time zone multicasting comes into play is when an NBP call is made.

For example, your Macintosh is on network 1, an EtherTalk 2.0 network, and has selected zone "Campbell 2" as the zone to which it belongs. There are five other Macintosh systems on network 1; one is an AppleShare File Server and has selected the zone "Campbell 2" to belong to. The other four have all chosen "Soup 1" as their zone. Now, you open the Chooser and select the AppleShare icon. Your Macintosh sends out an NBP lookup for all AppleShare File Servers in the "Campbell 2" zone. This NBP lookup is encapsulated in an Ethernet packet with a multicast address that matches only two nodes on network 1: your node and the AppleShare File Server.

Only the AppleShare File Server node will process the packet. The others will ignore the packet because the multicast address does not match any address in their multicast address hash table. On an EtherTalk 1.0 network, every node on the network or same physical cable would have processed the packet.
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