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AppleTalk Phase 2: Short-Form Versus Extended-Form DDP Headers

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TOPIC -----

Kinetics K-STAR 8.0 supports AppleTalk Phase 2. Under AppleTalk Phase 2, most of the AppleTalk data-link layer changed. Multicast addressing was added, and RTMP was changed quite a bit. Also, the network layer was changed. The short-form DDP header was outlawed. The short-form DDP header is useful only for sending packets within a network, not between networks.

When Kinetics heavily modified K-STAR to support AppleTalk Phase 2, they failed to change the DDP packets their RTMP and ZIP packets were encapsulated in. So, even under K-STAR 8.0, FastPaths send their RTMP and ZIP packets in the short-form DDP header on AppleTalk Phase 1 (non-extended) networks. This seems to work under most circumstances. However, if you run an Apple Internet Router, it expects to see the extended-form DDP headers even on AppleTalk Phase 1 networks. Therefore, even if you use the AppleTalk Phase 2 Upgrade Utility, you still get "Router Version Mismatch" errors.

Why didn't Kinetics switch all their DDP headers to the extended form, which is valid on all networks and always has been? Why would we ever send anything in a short-form header? Why do we even support sending short-form headers since extended-form headers can do everything the short-form ones can?

DISCUSSION -----

In AppleTalk Phase 2, the short-form DDP header is not "outlawed". The short-form DDP header is, and will continue to be, a valid DDP header format.

The extended-form DDP header must be used on all AppleTalk Phase 2 extended networks. Examples of AppleTalk Phase 2 extended networks include EtherTalk 2.x and TokenTalk 2.0.

The short-form DDP header can be used only on non-extended networks, like LocalTalk or EtherTalk 1.x. On a non-extended network, the short-form DDP header can be used for packets whose source and destination nodes have the same network number. The Link Access Protocol (LAP) header for LocalTalk and EtherTalk 1.0 packets contain the source and destination node IDs. Because of this, the source and destination network numbers and node IDs in the extended-form DDP packet are redundant when the packets source and destination nodes have the same network number.

Short-form DDP headers are used solely for efficiency reasons. In fact, an implementation of DDP is permitted to send extended-header DDP packets even when the source and destination nodes are on the same AppleTalk Phase 1 or non-extended AppleTalk Phase 2 network. For example, the AppleTalk Internet Router uses extended-form DDP headers exclusively, even on non-extended networks, like EtherTalk 1.x.

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