AppleTalk Phase 2 and LocalTalk-Based Networks

I would like to clear up what appears to be some confusion about the use of AppleTalk Phase 2 on a LocalTalk-based network. This is my understanding of the situation:

1) AppleTalk Phase 2 does not necessarily provide any benefit on a LocalTalk-based network and, in particular, does not enhance network performance. It may, however, be useful where the number of nodes on an Internet are expected to exceed 256 (because of address lengths).

2) It is better to use AppleTalk Phase 2 on a LocalTalk-based network when connecting to another AppleTalk Phase 2 network (removing the overhead of the AppleTalk Phase 2 Upgrade Utility). There are also some other benefits related to zone naming and removing some old limitations on Internets. To upgrade a LocalTalk-based network to AppleTalk Phase 2, all that is necessary is to copy the AppleTalk file that comes with AppleTalk Internet Router into the System Folder of any LocalTalk machines.

3) All networked machines should be upgraded to AppleTalk Phase 2 as it eventually will be included in ROMs, and additionally, Apple will stop shipping the AppleTalk Phase 2 Upgrade Utility with the router (from the MacLAN documentation).

4) Can you tell me where devices like LaserWriters fit in? On the AppleTalk Phase 2 Upgrade Utility, when you search for network devices, Macintosh systems with the AppleTalk file are identified as AppleTalk Phase 2. Other Macintosh systems are identified as AppleTalk Phase 1 (that is, on LocalTalk), and LaserWriters are identified as unknown devices. What does this mean?

5) Why does the router need the upgrade utility to route between AppleTalk Phase 1 and AppleTalk Phase 1? How is it used (that is, does it convert the address to AppleTalk Phase 2 and back again)?

Will you confirm or correct my understanding of this issue. I am aware that opinions do differ somewhat within Apple, indicating that there is some confusion in this matter.

1) AppleTalk Phase 2 routers on LocalTalk-based networks do offer better performance than AppleTalk Phase 1 routers in the following situation:

Reduced broadcast traffic: One of the key reasons for customers to upgrade from AppleTalk Phase 1 to AppleTalk Phase 2 is the split horizon RTMP enhancement. Split horizon reduces the number of redundant routing table entries exchanged by routers. The split horizon algorithm is: All entries whose forwarding port in the routing table is equal to the port out that the entry is being sent are omitted from the RTMP Data packet. In other words, Router A will not include network numbers in RTMP packets broadcast on Network X when Network X is the path (forwarding port) for Router A to reach these other networks.

This information applies to LocalTalk-based networks connected via AppleTalk Internet Routers. Note that each AppleTalk Internet Router running the AppleTalk Phase 2 Upgrade Utility broadcasts AppleTalk Phase 1 and AppleTalk Phase 2 RTMP packets on LocalTalk-based networks. This means that an AppleTalk Internet Router running the AppleTalk Phase 2 Upgrade Utility actually increases broadcast traffic on LocalTalk-based networks networks connected to it.

AppleTalk Phase 2 does not provide any benefit to LocalTalk-based networks and Internets for node addressing. Node IDs are still 8 bits (0-255), and network numbers are still 16 bits (0-65,535).

2) The AppleTalk file you are referring to, when installed in the System Folder, causes version 53 of AppleTalk to be used in place of the ROM version of AppleTalk. Version 53 of the AppleTalk driver gives users on LocalTalk-based networks the ability to support some of the new high-level AppleTalk calls that do not in any way change the protocols used on the LocalTalk physical medium. These new high-level AppleTalk calls are documented in Macintosh Technical Note #250.

It is not necessary to use the AppleTalk Phase 2 Upgrade Utility on AppleTalk Internet Routers when no AppleTalk Phase 1 routers are on the Internet. This means that an all-LocalTalk Internet using only AppleTalk Internet Routers does not require the use of the AppleTalk Phase 2 Upgrade Utility. The LocalTalk nodes do not require the use of AppleTalk version 53 in this scenario.

LocalTalk-based networks, running AppleTalk version 53 or not, do not receive "other benefits related to zone naming and removing some old limitations on Internets" as you imply. LocalTalk networks have not changed in this respect with the advent of AppleTalk Phase 2.

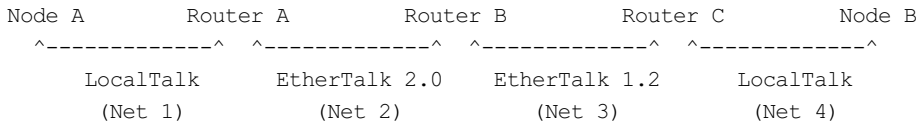
3) Yes, all non-LocalTalk AppleTalk devices should eventually upgrade to AppleTalk Phase 2 compatibility. Yes, future Macintosh systems will ship with AppleTalk version 53 or later in ROM. Eventually, the AppleTalk Phase 2 Upgrade Utility will stop being shipped with the AppleTalk Internet Router. There is no timeframe for this.

4) AppleTalk devices that attach to a network via LocalTalk will continue to work on AppleTalk Phase 2 Internets as they do now on AppleTalk Phase 1 Internets. Remember, LocalTalk-based networks have the same limitations running under AppleTalk Phase 2 that they had under AppleTalk Phase 1. The AppleTalk "Phase 2 Node Identifier" utility that comes on the AppleTalk Phase 2 Upgrade Utility disk declares an AppleTalk node as AppleTalk Phase 2 if the AppleTalk version is 53 or greater and the AppleTalk type is "Macintosh xxx" where "xxx" is the type of Macintosh. If the AppleTalk version is less than 53 and the AppleTalk type is "Macintosh xxx", the node is identified as AppleTalk Phase

1. Nodes with an AppleTalk type other than "Macintosh xxx" are identified as unknown devices.

5) The AppleTalk Internet Router does not need the AppleTalk Phase 2 Upgrade Utility when routing between two LocalTalk-based networks. The AppleTalk Phase 2 Upgrade Utility allows the AppleTalk Internet Router to broadcast and receive AppleTalk Phase 1-style RTMP packets. This is all the AppleTalk Phase 2 Upgrade Utility does. The only time the AppleTalk Internet Router needs the AppleTalk Phase 2 Upgrade Utility is when there is an AppleTalk Phase 1 router on the same physical cable as the AppleTalk Internet Router.

An example of this:

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Router A is an AppleTalk Internet Router
Router B is an AppleTalk Internet Router
Router C is a Kinetics FastPath 4 - AppleTalk Phase 1 only
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Since Router C, the FastPath, is an AppleTalk Phase 1 router, the AppleTalk Internet Router (Router B) must run the AppleTalk Phase 2 Upgrade Utility. The AppleTalk Phase 2 Upgrade Utility causes Router B to generate and broadcast AppleTalk Phase 1-style RTMP packets onto Net 3. Router A does not need to use the AppleTalk Phase 2 Upgrade Utility because it is not on the same physical cable as the AppleTalk Phase 1 router (the FastPath). If Router C was replaced with an AppleTalk Internet Router and Net 3 was an EtherTalk 2.0 network, the AppleTalk Phase 2 Upgrade Utility would not be needed on any of the routers.

The following Tech Info Library article can help you find the Tech Note mentioned here:

Article 24493: "**Apple Tech Notes: What They Are, Where To Find Them**"
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