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To: IEEE 802.4L

Date: 90.03.13

Subject: Considerations for a "head-end" distribution system for the 802.4L radio LAN

Discussions at the pre-plenary meeting of 802.4L in Irvine, CA, demonstrated that the rationale for centralizing the assessment process in the head-end distribution system, as discussed at the Vancouver, BC, meeting in July 1989, has not been documented.

A distribution system is composed of a number of similar elements, where each element consists (conceptually) of an antenna, a full modem, a unit which can buffer a received Ph-PDU (which is the basic unit of transmission) and assess the correctness and quality of that received Ph-PDU, a potentially redundant way of choosing whether this buffered Ph-PDU is the one which should be shared with all other distribution system elements and then sharing this Ph-PDU with the other distribution system elements, and a method of delaying the shared Ph-PDU before rebroadcast through the modem and antenna to create what would amount to an end-fired antenna when viewed from directly overhead in orbit.

antenna

modem T/R

rcvd Ph-PDU memory + assessment

redundant selectors
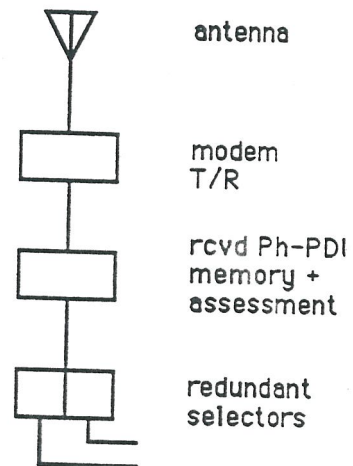
These components can be combined in a single unit physically attached to the element's antenna, with a potentially redundant communications network to connect the multiple elements' selection logic. Alternatively, the modem can be combined with the antenna, while the buffering and assessment unit, the selection logic, and the retransmission delay unit are located remotely, physically near the equivalent logic of the other distribution system elements, and connected by a very short network. Many practical implementation problems are addressed by this latter approach, including

- placing the majority of the digital equipment in a relatively benign, easily accessible environment,

- reducing the problem of choice of which Ph-PDU to rebroadcast from a physically-distributed selection process to a physically-localized and potentially centralized selection process, and

- permitting a fixed delay per distribution system element for each rebroadcast Ph-PDU, as opposed to a delay dependent on the identity of the source node (to account for the varying point-to-point propagation delays of the distributed selection and redistribution approach), and thus simplifying the configuration of the system and each such element. .