



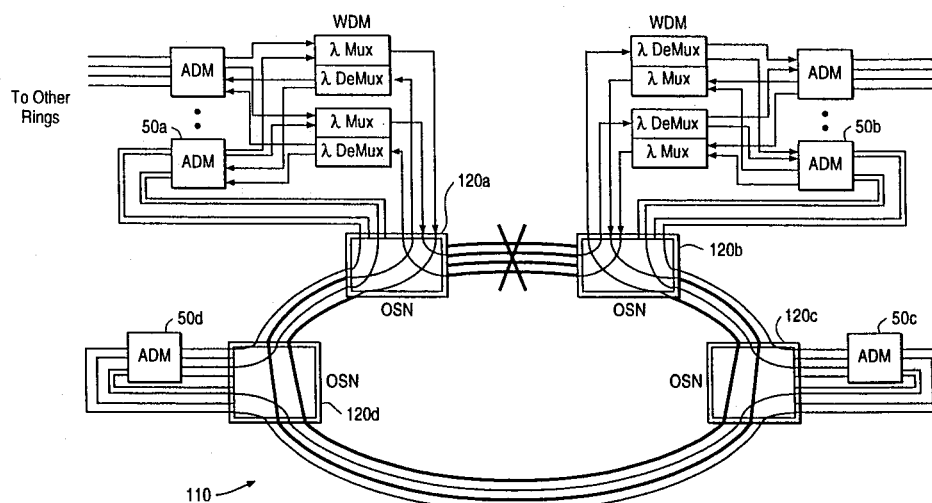
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(54) Title: METHOD AND APPARATUS FOR OPERATION, PROTECTION, AND RESTORATION OF HETEROGENEOUS OPTICAL COMMUNICATION NETWORKS



(57) Abstract

Techniques for providing normal operation and service restoration capability in the event of failure of terminal equipment or transmission media in a heterogeneous network, such as a hybrid network containing single- and multi-wavelength lightwave communications systems. An optical switching node or OSN (12, 120a-d) is placed at each node in the ring network (110) to provide the required connections between various fibers (55) and terminal equipment (50, 50a-d), but having switch states that allow signals on the protection fibers to bypass the terminal equipment at that node. Ring-switched signals propagate around the ring on protection fibers (55adp', 55dap') without encountering the terminal equipment at the intervening nodes. To the extent that the protection fiber links between any given pair of nodes are incapable of supporting all the relevant communication regimes, such links are modified to provide such support.

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