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ROUTING INFORMATION SUPERVISORY SYSTEM IN IP-OVER-WDM RING ARCHITECTURE FOR CUSTOMER-OWNED NETWORK APPLICATION

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Abstract. *We have designed and implemented a routing information supervisory system for customer-owned optical IP ring networks. The one-by-one (O-O) and point-to-point (P2P) link integration scheme over native-Ethernet optical ring networks was proposed for the customer-owned network configuration, based on CWDM technologies, and the remote implementation function of the supervisory system was examined in the proposed network. The routing in the network was configured remotely by the implemented supervisory system. The throughput measurements clarified that the routing function implementation for the integration of the O-O and P2P links was successfully made to provide nominal speed of 100 Mbps to users. As a result, the supervisory system has functions enough to configure the routing functions remotely for the customer-owned optical IP networks.*
Keywords: Supervisory system, Remote implementation, Optical MAN, IP-over-WDM

1. **Introduction.** Optical fiber networks are expected to satisfy the increasing traffic demands, by utilizing the high-capacity and low-loss characteristics. This trend is the same in wide area network (WAN) and metropolitan area network (MAN) applications to connect buildings/offices for business use, which are often referred to as intranet, or enterprise networks.

To transmit such business data, cell relay and frame relay services are used in public networks. Recently IP-VPN (Internet Protocol-Virtual Private Network) service or wide Ethernet service is used more often than the cell and frame relay services, mainly due to the cost advantages [1]. Another solution is the dark-fiber or customer-owned networks [2, 3]. This new type of network is becoming increasingly common among large enterprise networks, university research networks, and government department networks in the USA and Canada. In the networks, enterprises, government departments, and other organizations acquire optical fibers for their own communication services. The big advantage of the customer-owned networks is much lower cost for one-time capital cost for the fibers, instead of conventional cost per month for bandwidth. Thereafter, any increase in bandwidth only requires a simple equipment upgrade. It is another advantage that the networks can be managed and controlled, according to the organization's policy.