Integrated Fault Management System in IP-over-WDM Networks

Amitava Mukherjee
Presently at KTH, Royal Institute of Technology, 164 40 Stockholm, Sweden
IBM Global Services India, Salt Lake, Calcutta 700 091 India
amitava.mukherjee@in.ibm.com or amitava@imit.kth.se

Abstract:

The next-generation optical Internet can be viewed as a collection of autonomous networks, which may be considered of different sizes from small corporate network to large backbone network. These networks can provide fast and high quality services to end users with the integration of computer and communication technologies and the fast maturation of fiber optic communication techniques. In the backbone networks, optical communication network will play a key role to provide diverse array of services to end-users. As more and more mission-critical business users are involved, the 99.99% uptime of services for those users is a must. As such, how to provide uninterrupted services to these users, and reduce the loss of service to a minimum if interruption is inevitable, becomes a critical design issue. That is, *survivability* must be considered in designing the optical communication network to provide uninterrupted continuous service to users in the presence of node/link failures. In order to design an *integrated* fault-management system in distributed network architecture, there are three different components namely (a) fault detection (b) fault recovery that involves protection and restoration mechanism and (c) fairness service provision for different needs. IP-over-WDM networking architecture is being shifted from a static point-to-point architecture toward more dynamic reconfigurable and switched architecture. This shift is away from static planned resource allocation and service provisioning, toward dynamic on-demand resource allocation and service provisioning. This shift is also away from centralized management and off-line optimization strategies toward distributed control and on-line incremental heuristics in network and traffic management. This poster presentation will briefly focus on this design methodology for IP-over-WDM networks in an integrated manner.