Limitations of Wavelength Division Multiplexing Technology

Overview

We have already observed that the broadcast-and-select architecture and spectrum routing architecture are unable to support dynamic requirements, such as, spectrum defragmentation, time multiplexing, regeneration, etc. T. We have already observed that the broadcast-and-select architecture and spectrum routing architecture are unable to support dynamic requirements, such as, spectrum defragmentation, time multiplexing, regeneration, etc. To overcome these limitations, the switch and select architecture with dynamic functionality has been introduced. In this architect. The broadcast-and-select architecture has been used to determine the elastic optical node architecture that uses spectrum selective switches. Figure 8.9 shows the node architecture of broadcast-and-select, which is implemented using splitters at the input ports. Splitters are used to generate copies of the incoming signals that are subsequently fi. The spectrum routing node architecture is being designed to overcome the problems with the broadcast-and-select node architecture. It is basically implemented with arrayed waveband gratings and optical switches as shown in Fig. 8.10. In spectrum routing, both switching and filtering functionalities are controlled by the spectrum selective switches. The architecture on demand (AoD) consists of an optical backplane that is implemented with a large port-count optical switch connected to several processing modules, namely — spectrum selective switch, fast switch, erbium-doped fiber amplifier (EDFA), spectrum defragmenter, splitter, etc. The inputs and outputs of the node are connected via the op. Table 8.1 summarizes the above discussed node architectures in terms of total power loss, port count of switch/backplane, routing flexibility, port count of spectrum selective switches, defragmentation capability, time multiplexing, and regeneration capability. The calculation of total power loss is determined by the type of node architecture i...

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I. INTRODUCTION The main drawbacks of our communication networks are capacity, speed, signal losses, distortion & power limitation. Fiber optic technology emerges as a pertinent solution to

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etwork-ing with advanced topologies supported with redundancy features. Historically, multiplexing had been used to share the limited bandwidth of the medium between different transmitters, but with

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Above about 25Gb/s, the average limit for direct modulation of typical laser sources, wavelength division multiplexing, parallel optics and coherent fiber optic systems

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What are the limitations (disadvantages) of wavelength division multiplexing in passive optical networks? In optical networks, generally TDM or WDM or Hybrid WDM-TDM is used for multiplexing

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This technique, also known as wavelength-division duplexing, allows bidirectional communication over a single strand of cable. WDM describes an optical carrier that is traditionally

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