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(QoS); 2.8.4 Virtual Private Network (VPN); 2.9 Distributed Systems; 2.9.1 Design Objectives; 2.9.2 Architectural Models 2.9.3 Clustering 2.9.4 API for Distributed Applications; 3 Characteristics of the Internet and IP Routing; 3.1 IP Router Overview; 3.1.1 IPv4 Datagram; 3.1.2 QoS Queuing Models; 3.2 Internet Traffic Engineering; 3.2.1 Shortest Path Routing; 3.2.2 Equal Cost Multi-Path (ECMP); 3.2.3 Optimised Multi-Path (OMP); 3.2.4 MPLS OMP; 3.3 TCP Traffic Policing; 3.3.1 TCP Flow Control; 3.3.2 TCP Congestion Control; 3.4 Internet Traffic Characteristics and Models; 3.4.1 Internet Traffic Statistics; 3.4.2 Traffic Models and Long Range Dependence; 3.5 Internet Routing 3.6 Open Shortest Path First Protocol (OSPF) 3.6.1 OSPF Messages; 3.6.2 Link State Advertisement (LSA); 3.6.3 Routing in OSPF; 3.7 Border Gateway Protocol (BGP); 3.7.1 Internal and External BGP; 3.7.2 BGP Messages; 3.7.3 Path Attributes; 3.7.4 Policy Filtering; 3.7.5 BGP Routing; 3.8 IPv6; 4 WDM Optical Networks; 4.1 Optical Modulation; 4.2 Optical Switching Components and Technology; 4.2.1 Optical Amplifier (OAMP) and Repeater; 4.2.2 Optical Add/Drop Multiplexer (OADM); 4.2.3 Optical Crossconnect (OXC); 4.2.4 Transponder; 4.2.5 Switching Fabric; 4.2.6 Optical Switch/Router 4.3 WDM NC&M Framework 4.3.1 TMN Framework; 4.3.2 WDM Network Management and Visualisation Framework; 4.4 WDM Network Information Model; 4.4.1 WDM Object Model; 4.4.2 An Example of WDM Network and Connection MIB; 4.5 WDM NC&M Functionality; 4.5.1 Connection Management; 4.5.2 Connection Discovery; 4.5.3 WDM Client Topology Reconfiguration; 4.5.4 Signal Quality Monitoring; 4.5.5 Fault Management; 4.6 WDM NE Management; 4.6.1 NE MIB; 4.6.2 NE Interfaces; 4.7 WDM Signalling; 4.7.1 Wavelength Signalling and Routing; 4.7.2 Circuit Switching vs. Just-In-Time (JIT) Burst Switching; 4.8 WDM DCN 4.9 WDM Network Views

Sommario/riassunto

This is the first book to focus on IP over WDM optical networks. It not only summarizes the fundamental mechanisms and the recent development and deployment of WDM optical networks but it also details both the network and the software architectures needed to implement WDM enabled optical networks designed to transport IP traffic. The next generation network employing IP over optical networks is quickly emerging not only in the backbone but also in metro and access networks. Fiber optics revolutionizes the telecom and networking industry by offering enormous network capacity to sustain the n
