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Contracts; 2.1 A Classification of Network Services; 2.1.1 Layering; 2.1.2 A Simple Technology Primer; 2.1.3 Value-added Services and Bundling; 2.1.4 Connection-oriented and Connectionless Services; 2.1.5 Guaranteed and Best-effort Services; 2.2 Service Contracts for Transport Services; 2.2.1 The Structure of a Service Contract; 2.2.2 Policing Service Contracts
2.2.3 Static and Dynamic Contract Parameters
2.3 Further Reading; 3 Network Technology; 3.1 Network Control; 3.1.1 Entities on which Network Control Acts; 3.1.2 Timescales; 3.1.3 Handling Packets and Cells; 3.1.4 Virtual Circuits and Label Switching; 3.1.5 Call Admission Control; 3.1.6 Routing; 3.1.7 Flow Control; 3.1.8 Network Management; 3.2 Tariffs, Dynamic Prices and Charging Mechanisms; 3.3 Service Technologies; 3.3.1 A Technology Summary; 3.3.2 Optical Networks; 3.3.3 Ethernet; 3.3.4 Synchronous Services; 3.3.5 ATM Services; 3.3.6 Frame Relay; 3.3.7 Internet Services
3.4 Other Types of Services
3.4.1 Private and Virtual Networks; 3.4.2 Access Services; 3.5 Charging Requirements; 3.6 A Model of Business Relations for the Internet; 3.7 Further Reading; 4 Network Constraints and Effective Bandwidths; 4.1 The Technology Set; 4.2 Statistical Multiplexing; 4.3 Accepting Calls; 4.4 An Elevator Analogy; 4.5 Effective Bandwidths; 4.6 Effective Bandwidths for Traffic Streams; 4.6.1 The Acceptance Region; 4.7 Some Examples; 4.8 Multiple QoS Constraints; 4.9 Traffic Shaping; 4.10 Effective Bandwidths for Traffic Contracts; 4.11 Bounds for Effective Bandwidths
4.12 Deterministic Multiplexing
4.13 Extension to Networks; 4.14 Call Blocking; 4.15 Further Reading; B Economics; 5 Basic Concepts; 5.1 Charging for Services; 5.1.1 Demand, Supply and Market Mechanisms; 5.1.2 Contexts for Deriving Prices; 5.2 The Consumer's Problem; 5.2.1 Maximization of Consumer Surplus; 5.2.2 Elasticity; 5.2.3 Cross Elasticities, Substitutes and Complements; 5.3 The Supplier's Problem; 5.4 Welfare Maximization; 5.4.1 The Case of Producer and Consumers; 5.4.2 The Case of Consumers and Finite Capacity Constraints; 5.4.3 Discussion of Assumptions; 5.4.4 Peak-load Pricing
5.4.5 Walrasian Equilibrium

Sommario/riassunto

Traditionally engineers devised communication services without reference to how they should be priced. In today's environment pricing is a very complex subject and in practice depends on many parameters of the actual market - including amount of traffic, architecture of the network, technology, and cost. The challenge is to provide a generic service model which accurately captures aspects such as quality and performance, and can be used to derive optimal pricing strategies. Recent technology advances, combined with the deregulation of the telecommunication market and the proliferation o
