Contemporary information networks are developing to meet social demands, and as a result new technologies and systems are being introduced. The fundamental problem in this process is the optimization of system dimensions and configuration for a particular level of performance. In the second edition of this innovative text, basic teletraffic theories and their applications are described in detail and practical formulae for advanced models, with references for further reading, are provided. Examples and exercises illustrate the theories' application to real systems. The revised and expanded text includes sections on ATM (asynchronous transfer mode) with the latest performance evaluations for mixed bursty traffic and bursty traffic with finite buffers, and LANs (local area networks) with an improved performance evaluation method for CSMD/CD (Ethernet). Explanations throughout the book have also been refined. The second edition of Teletraffic is a translation and expansion of the original Japanese text by two leading authors. It enables researchers, engineers and telecommunication and computer network managers, even those not experts in teletraffic, to put the latest theories and engineering into practice.