



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

E.500

(11/98)

SERIES E: OVERALL NETWORK OPERATION,
TELEPHONE SERVICE, SERVICE OPERATION AND
HUMAN FACTORS

Quality of service, network management and traffic
engineering – Traffic engineering – Measurement and
recording of traffic

Traffic intensity measurement principles

ITU-T Recommendation E.500

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION E.500

TRAFFIC INTENSITY MEASUREMENT PRINCIPLES

Summary

This Recommendation describes traffic intensity concepts and traffic intensity measurement methodologies. The concepts of normal and high load are described and the methodology for using these measured traffic intensities in determining the load for traffic system dimensioning is discussed.

Source

ITU-T Recommendation E.500 was revised by ITU-T Study Group 2 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 9th of November 1998.



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FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation the term *recognized operating agency (ROA)* includes any individual, company, corporation or governmental organization that operates a public correspondence service. The terms *Administration*, *ROA* and *public correspondence* are defined in the *Constitution of the ITU (Geneva, 1992)*.

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As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Recommendation E.500**TRAFFIC INTENSITY MEASUREMENT PRINCIPLES***(revised in 1998)***1 Scope**

This Recommendation considers traffic intensity measurements for traffic systems consisting of a pool of resources and random arrival events that require the use of some amount of resources from the pool for some period of time. Traffic systems with and without waiting room (i.e. queueing) are considered. Only traffic systems with a pool of resources of a single type are considered. The defined traffic intensity measurements relate to the use of stationary arrival process models to characterize traffic over the measurement intervals.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- ITU-T Recommendation E.492 (1996), *Traffic reference period*.
- ITU-T Recommendation E.501 (1997), *Estimation of traffic offered in the network*.
- CCITT Recommendation E.503 (1992), *Traffic measurement data analysis*.
- CCITT Recommendation E.504 (1988), *Traffic measurement administration*.
- CCITT Recommendation E.506 (1992), *Forecasting international traffic*.
- CCITT Recommendation E.507 (1988), *Models for forecasting international traffic*.
- CCITT Recommendation E.508 (1992), *Forecasting new telecommunication services*.
- ITU-T Recommendation E.600 (1993), *Terms and definitions of traffic engineering*.

3 Definitions

This Recommendation defines the following terms:

The **Daily Peak Period (DPP) traffic intensity measurement method** is the method in which traffic intensity is measured for consecutive read-out periods of each day, and the peak traffic intensity for the day is recorded. This method requires continuous measurements.

The **Fixed Daily Measurement Interval (FDMI) traffic intensity measurement method** is the method in which a predetermined time interval (i.e. a set of consecutive read-out periods during a day) in which peak period loads usually occur is identified, and during that time interval each day traffic intensity measurements are taken. The peak traffic intensity over the measured read-out periods is recorded for the day.

Normal load condition identifies frequent busy operating conditions of the network for which user expectations should be met.

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