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QUALITY OF SERVICE, NETWORK MANAGEMENT AND TRAFFIC ENGINEERING

STANDARD TRAFFIC PROFILES FOR INTERNATIONAL TRAFFIC STREAMS

ITU-T Recommendation E.523

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation E.523 was published in Fascicle II.3 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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STANDARD TRAFFIC PROFILES FOR INTERNATIONAL TRAFFIC STREAMS

The worldwide nature of the international telephone network, spanning as it does all possible time zones, has stimulated studies of the traffic streams between countries in different relative time locations. These studies have led to the development of standardized 24-hour traffic profiles which, theoretically based and verified by measurements, would be useful for engineering purposes. In fact, these concepts can be applied to a variety of network situations:

- i) variable access satellite working where a large number of traffic streams with possibly differing traffic profiles share the pool of satellite circuits;
- ii) combining of traffic streams on groups of terrestrial circuits which may be either high-usage or final choice routes;
- iii) detour routing of traffic between origin and destination countries to take advantage of prevailing low load conditions on the detour path.

In developing any such applications, account must be taken of the International Routing Plan (Recommendation E.171 [1]) and of accepted accounting principles (Recommendation D.150 [2]).

It must be recognized that the preferred basis for dimensioning consists of traffic profiles based on real traffic. Nevertheless, many countries have found the standard profiles presented in this Recommendation very useful where streams are too small to obtain reliable measurements or where no measurements are available.

For both-way profiles, two equivalent methods of presentation are given in chart and tabular form. In Figure 1/E.523 hour-by-hour traffic volumes are shown in diagrammatically as percentages of the total daily traffic volume; such percentages are particularly convenient for tariff studies. In Table 1/E.523, hourly traffics are expressed as percentages of the busy hour traffic, and this is convenient for engineering purposes. Time zone differences are given in whole hours only. Directional profiles are given in Tables 2/E.523 and 3/E.523.

Although tables are given for both-way and directional traffic streams, it must be emphasized that at this stage only the both-way profiles can be regarded as soundly supported by measurement. The directional profiles are theoretically based and supported by some measurements, but should be used with caution until adequate verification has been achieved.

The theoretical basis for the profiles presented here is contained in Annex A. It depends on a convenience function $f(t)$ which represents the profile of *local* daily traffic, where of course no time zone difference exists. The function $f(t)$ used for computation of the standard profile was derived by mathematical manipulation of measurements of the Tokyo-Oakland and Tokyo-Vancouver streams. Although these results have been supported by other measurements, it leaves open the possibility that the convenience function may vary from one country to another and that, strictly, these should be derived independently and then used to obtain a calculated profile for the international relation. It also seems that the convenience function for the country of destination should be given greater weight than that for the country of origin. These remarks suggest possible refinements, but are not quantified in this Recommendation.