INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

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TELECOMMUNICATION
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OF ITU

PUBLIC DATA NETWORKS

TRANSMISSION, SIGNALLING AND SWITCHING

FUNDAMENTAL PARAMETERS OF A MULTIPLEXING SCHEME FOR THE INTERNATIONAL INTERFACE BETWEEN SYNCHRONOUS NON-SWITCHED DATA NETWORKS USING NO ENVELOPE STRUCTURE

ITU-T Recommendation X.58

(Extract from the *Blue Book*)

NOTES

1   ITU-T Recommendation X.58 was published in Fascicle VIII.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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(Melbourne, 1988)

The CCITT

considering

(a)   that Recommendation X.50 sets out the fundamental parameters for a multiplexing scheme for the interworking of networks where at least one makes use of the 8-bit envelope structure or of the four 8-bit envelopes grouping;

(b)   that there is a requirement for a multiplexing scheme for the interworking between two networks where both use non-envelope structured data,

unanimously declares the view

that the following fundamental parameters shall be used between networks using no envelope structures.

1   Gross bit rate

For transmission on the international link the aggregate bit stream shall have a gross bit rate of 64 kbit/s.

2   Tributary channel bit rates

The following tributary channel bit rates are supported:

-      2.4 kbit/s

-      4.8 kbit/s

-      9.6 kbit/s

-      19.2 kbit/s

Other bit rates are not excluded.

3   Multiplex scheme

The multiplex scheme is shown in Figure 1/X.58. The frame length is 640 bit. The frame duration is 10 ms. Tributary channel data is grouped in octets and appears in slots An through Fn. Slots Sn contain synchronization octets. Slots Tn contain service octets.

S1	A1	B1	C1	D1	E1	F1	B2	A2	D2	C2	F2	E2	A3	B3	C3	D3	E3	F3	T1
S2	B4	A4	D4	C4	F4	E4	A1	B1	C1	D1	E1	F1	B2	A2	D2	C2	F2	E2	T2
S3	A3	B3	C3	D3	E3	F3	B4	A4	D4	C4	F4	E4	A1	B1	C1	D1	E1	F1	T3
S4	B2	A2	D2	C2	F2	E2	A3	B3	C3	D3	E3	F3	B4	A4	D4	C4	F4	E4	T4
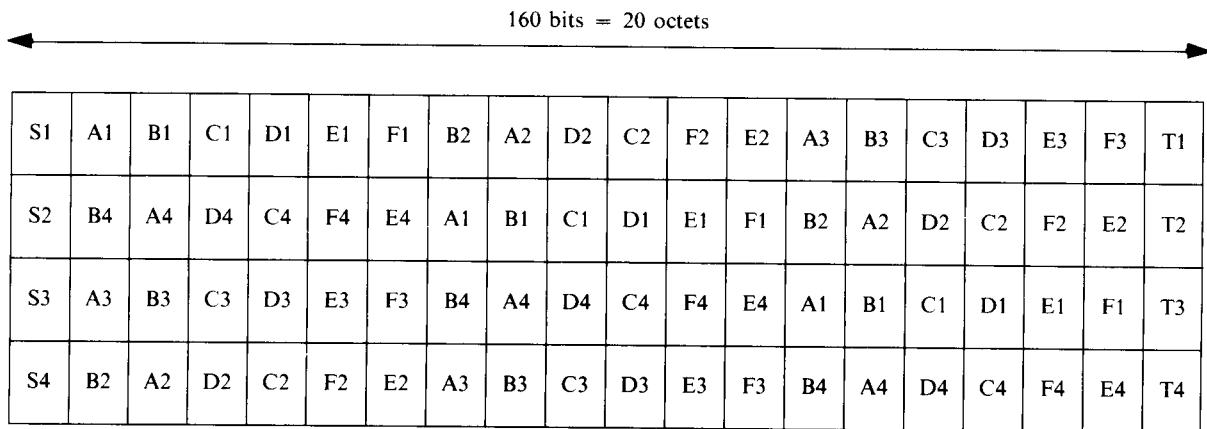
FIGURE 1/X.58

Multiplex scheme

3.1 *Data octets*

One frame contains 72 data octets. Thus the multiplex stream can cupport

24 channels of 2.4 kbit/s, or

12 channels of 4.8 kbit/s, or

6 channels of 9.6 kbit/s, or

3 channels of 19.2 kbit/s, or

combinations thereof.

The allocation of individual octets to a tributary channel is detailed below.

3.1.1 *2.4 kbit/s*

2.4 kbit/s tributary channels employ 1 out of 24 data octets. A 2.4 kbit/s channel will thus be allocated to all slots with the same identifier, i.e. identification letter and identification digit (e.g. A1).

3.1.2 *4.8 kbit/s*

4.8 kbit/s tributary channels employ 1 out of 12 data octets. A 4.8 kbit/s channel will thus be allocated to all slots with the same identification letter in the range A-F and two different identification digits 1 and 3 or 2 and 4 (e.g. B1 and B3).

3.1.3 *9.6 kbit/s*

9.6 kbit/s tributary channels employ 1 out of 6 data octets. A 9.6 kbit/s channel will thus be allocated to all slots with the same identification letter in the range A-F and four different identification digits 1, 2, 3 and 4 (e.g. D1, D2, D3 and D4).

3.1.4 *19.2 kbit/s*

19.2 kbit/s tributary channels employ 1 out of 3 data octets. A 19.2 kbit/s channel will thus be allocated to all slots with two different identification letters from the range A-F: A and D or B and E or C and F, and four different identification digits 1, 2, 3 and 4 (e.g. C1, F1, C2, F2, C3, F3, C4 and F4).

3.1.5 *Other bit rates*

For other bit rates no allocation of octet, to a tributary channel is specified. From the scheme in Figure 1/X.58 it can be derived that any bit rate n times 2.4 kbit/s where n is 1 through 24 can be supported. Detailed allocation schemes should be specified by bilateral agreement.

3.2 *Synchronization octets*

One frame contains 4 synchronization octets. These contain fixed bit patterns as follows:

S1 = 27 = 00100111

S2 = 1B = 00011011

S3 = 05 = 00000101

S4 = 35 = 00110101

3.3 *Service octets*

The octets T1 through T4 are available for housekeeping information signals.

The following allocation is recommended but not mandatory.

Octet T1 contains eight bits, A, B, C, D, E, F, G and H (cf. Recommendation X.50). Bit A is the first bit transmitted.

The bit A is used to convey to the distant end alarm indications detected at the local end corresponding to:
- absence of incoming pulses,
- loss of frame alignment,

and that bit A shall be assigned such that:
- A equals 1 means no alarm,
- A equals 0 means alarm.

The other bits B, C, D, C, F, G and H are reserved to convey further international housekeeping signals. The exact use is under study. Pending the result of the study these bits shall be set to binary 1.

The octets T2 through T4 are reserved for national use and shall be set to binary 1 on an international link.

4 Frame synchronization

Frame synchronization is obtained by the receiving multiplexer during normal operation. No interaction between multiplexers at both ends of the link is required for this purpose.