



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

I.601

**INTEGRATED SERVICES DIGITAL
NETWORK (ISDN)**

MAINTENANCE PRINCIPLES

**GENERAL MAINTENANCE PRINCIPLES
OF ISDN SUBSCRIBER ACCESS
AND SUBSCRIBER INSTALLATION**

ITU-T Recommendation I.601

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation I.601 was published in Fascicle III.9 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.

© ITU 1988, 1993

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.



Documents

Document Sharing Hub

Recommendation I.601**GENERAL MAINTENANCE PRINCIPLES OF ISDN SUBSCRIBER ACCESS
AND SUBSCRIBER INSTALLATION***(Melbourne, 1988)***1 Scope of application**

1.1 This Recommendation outlines the general aspects and principles relating to the reference configurations and general architecture for each kind of subscriber access (basic, primary, multiplexed, higher rate) and associated subscriber installations. This is given in terms of the function groupings and the interconnecting communication parties.

Loopback definitions and their locations used in this Recommendation are also given.

1.2 Recommendation I.602 is concerned with the maintenance of the ISDN subscriber installation. The maintenance principles are given in a general way for functions which are dependent on the design of NT2 and TE and more precisely where it impacts directly on the S or T interface (i.e. in relation to Recommendations I.430, I.431). These functions are supervised and/or controlled by the subscriber installation.

The ISDN management protocols which provide this activity are contained in Recommendation Q.940 on ISDN user-network management and maintenance protocols.

1.3 Recommendation I.603 describes maintenance for the network portion of the ISDN basic access (144 kbit/s). A common format with other similar Recommendations, in conformance with Recommendation M.20, is used.

The functions performed by the digital transmission section and the exchange termination (ET) are identified. These functions are supervised and/or controlled by the network or Administration (see § 3.3 of Recommendation I.601).

1.4 Recommendation I.604 describes maintenance of the network portion of the ISDN primary access (2048 and 1544 kbit/s) following the same principles as given in Recommendation I.603.

The functions provided by the digital transmission section and the exchange termination (ET) are identified. The functions are supervised and/or controlled by the network or Administration.

1.5 Recommendation I.605 describes the maintenance of a multiplexed basic rate system. Reference is made to Recommendations I.603 and I.604 when common mechanisms are applied.

The functions performed by the digital section of the ISDN basic rate access, the basic access multiplexer, the digital link, and the exchange termination (ET) are identified. These functions are supervised and/or controlled by the network or Administration.

2 Objectives

In order to try and meet overall objectives, a number of points have been identified for Administrations and maintenance service providers (see § 3.2.2.3):

- i) to detect fault conditions, identify the failed maintenance entity, take system protection actions, inform the maintenance staff of Administrations;
- ii) to incorporate facilities to enable the failure to be located by the maintenance staff, so that failure correction is achievable by a single attendance to the failed location;
- iii) to provide an appropriate maintenance organization and levels of staffing, so as to achieve goals for out-of-service repair times;

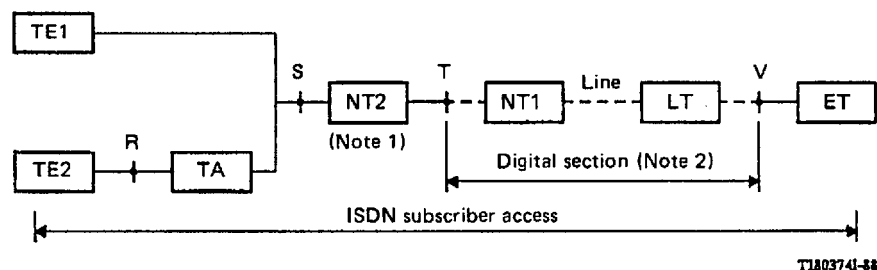
- iv) to incorporate facilities to allow clear differentiation of failures between the subscriber installation and the network;
- v) to incorporate facilities to allow clear differentiation between failures and normal subscriber activities.

3 Network reference model

3.1 ISDN subscriber access and installation configuration

Figure 1/I.601 shows the simplified ISDN subscriber access and installation configuration (based on Recommendations I.411 and Q.512).

The definitions contained in this figure are the ones used in the I.600-Series Recommendations.



Note 1 – The NT2 functional grouping may be null. In this case the S and T reference points are coincident.

Note 2 – The ISDN subscriber access contains a digital section which can use a variety of transmission techniques and may also include a regenerator. The digital section could be a basic rate section, a primary rate section, or a multiplexed basic rate section.

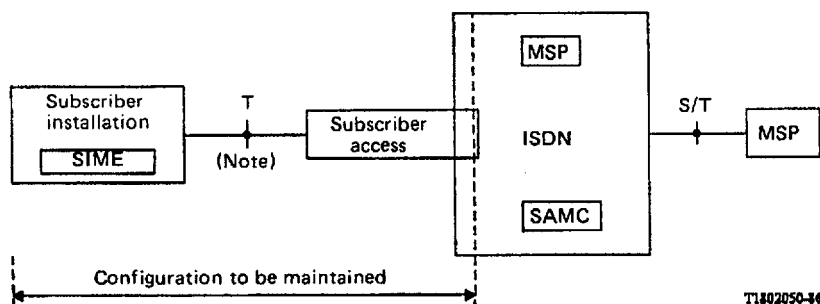
FIGURE 1/I.601

**Simplified ISDN subscriber access and installation configuration
(based on Recommendations I.411 and Q.512)**

3.2 Network configuration and definition for maintenance activities

3.2.1 Network configuration

Figure 2/I.601 is the basis for the general maintenance principles of the ISDN access and subscriber installation.



SAMC Subscriber access maintenance centre
SIME Subscriber installation maintenance entity
MSP Maintenance service provider

Note – In the case where the subscriber installation does not contain a NT2, the S and T reference points are coincident.

FIGURE 2/I.601

Reference configuration for maintenance activities

3.2.2 *Definitions*

3.2.2.1 **Subscriber Access Maintenance Centre (SAMC)**

A SAMC represents a group of functions, network equipment elements and staff controlled by the Administration, which together have the responsibility and capability for maintenance functions and maintenance actions within the subscriber access, such as defined in Figure 2/I.601.

The equipment and functions may be centralized or distributed in the network, local exchange and subscriber access. The architecture of the SAMC and its internal interface(s) between SAMC staff equipment(s) is presented in § 3.4. Conceptually, the SAMC is considered to be a single functional entity within an ISDN, as seen by the subscriber.

3.2.2.2 **Subscriber Installation Maintenance Entity (SIME)**

A SIME represents a group of dedicated functions contained within the functional groups (as specified in Recommendation I.411) of the subscriber installation which have the following purposes, e.g.:

- interaction with the (human) user;
- handling of the maintenance protocol from the subscriber installation and/or maintenance service provider;
- control of internal testing and maintenance mechanisms.

It is considered that the functions of the SIME may be distributed throughout layers 1-3 and management/maintenance entities, including NT1 functions in some applications. However, the precise architecture and protocol of the SIME is not a subject of this Recommendation.

3.2.2.3 **Maintenance Service Provider (MSP)**

The MSP represents a group of functions, equipment and maintenance staff, which together have the responsibility for maintaining a subscriber installation or a part of the subscriber installation. A MSP cannot control the maintenance functions of the subscriber access. If authorized, it can request an SAMC to perform these functions.

Agreement and responsibility for maintenance between the subscriber and the MSP for each part or parts of the subscriber installation should be made at the time of subscription to the maintenance service (this may take the form of a commercial contract). In any case, provision to allow a customer to change the maintenance service provider(s) is recommended. The subscriber may choose not to make such an agreement with the MSP.

Maintenance service providers can be:

- private providers;
- the Administration.

Note - A subscriber can act as his own MSP.

A private maintenance service provider external to ISDN is connected to the ISDN via a recommended T reference point. An Administration's maintenance service provider may be connected to the ISDN via a recommended T reference point or via an interface which is internal (outside the scope of this Recommendation) to the ISDN. More than one MSP may have the responsibility to maintain one subscriber installation. The responsibility for maintaining each equipment shall be unique. Other interfaces are for further study.

If authorized, the MSP can invoke maintenance function in the SIME. It is the sole responsibility of a subscriber installation and not of the network to ensure that an unauthorized MSP cannot get access to maintenance functions in the subscriber installation.

3.3 *Communication configurations*

3.3.1 *General*

The presentation of the relationships between the functional blocks SAMC, SIME and MSP and the