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MAINTENANCE: ISDN

APPLICATION OF MAINTENANCE PRINCIPLES TO ISDN BASIC RATE ACCESS



Recommendation M.3603

FOREWORD

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Recommendation M.3603 was revised by Study Group IV and was approved under the Resolution No. 2 procedure on the 5th of October 1992.

CCITT NOTE

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

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Recommendation M.3603

APPLICATION OF MAINTENANCE PRINCIPLES TO ISDN BASIC RATE ACCESS

(Melbourne 1988 as Rec. I.603; revised and renumbered in 1992)

Abstract

This Recommendation defines capabilities and functions used by the network to maintain the physical layer of ISDN basic rate access.

Keywords

- basic rate access;
- ISDN;
- maintenance.

1 Scope of application

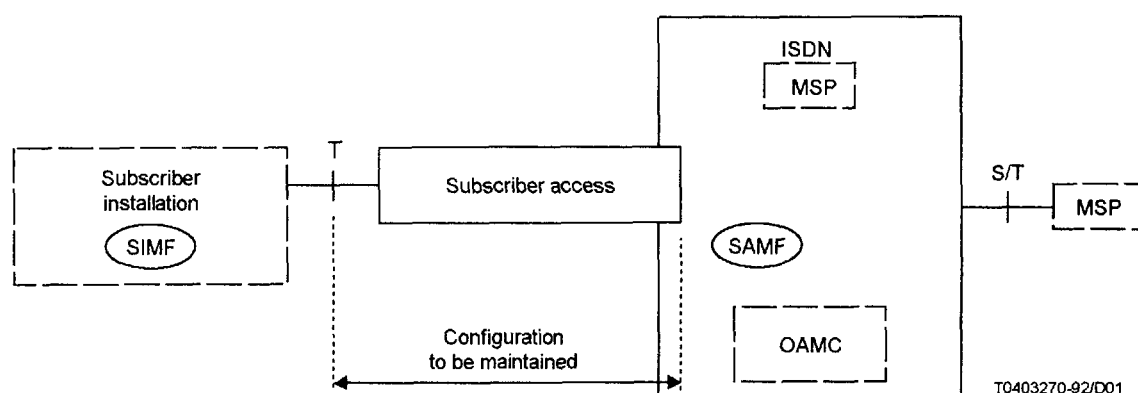
This Recommendation covers the maintenance of that part of the ISDN subscriber basic access which is controlled by the network. The Recommendation follows the maintenance principles as defined in Recommendation M.20 [1] and applies to the basic access directly connected to the local exchange without any multiplexer or concentrator.

The principle of controlled maintenance (as defined in Recommendation M.20 [1]) is applied for maintaining the subscriber basic access.

Controlled maintenance is a method of sustaining a desired technical performance by the systematic application of supervision, testing and performance sampling in order to minimize preventive maintenance and to reduce corrective maintenance.

2 Network configuration for maintenance activities

Figure 1/M.3603 is the basis for the general maintenance principles of the subscriber access.



MSP Management Service Provider
OAMC Operation Administration Maintenance Centre
SAMF Subscriber Access Management Function
SIMF Subscriber Installation Management Function

For a detailed discussion of these terms, see Recommendation M.3600 [3].

Note 1 – The subscriber access contains a digital section which can use different varieties of transmission techniques and may also include a regenerator.

Note 2 – In some countries, certain maintenance functions within the subscriber access are controlled by the subscriber installation (SIMF).

FIGURE 1/M.3603

Configuration for the maintenance of the basic rate access

3 Failure detection

3.1 General

When the digital section (as seen by the exchange) of the ISDN subscriber basic access is in the active state, automatic supervision of the correct functioning of the layer 1 up to the NT1 is operating. This supervision is called continuous automatic supervision on layer 1.

When the ISDN subscriber basic access is in the active state (as seen by the exchange), automatic supervision of the correct functioning of the D-channel layers 2 and 3 is also operating. This supervision is called automatic supervision on layers 2 and 3 of the D-channel protocol.

When the ISDN subscriber basic access is not in an active state (as seen by the exchange), the subscriber access may be periodically tested by the exchange. This is called the continuity test.

3.2 Automatic supervision

3.2.1 Continuous automatic supervision of layer 1

3.2.1.1 Objectives

This supervision is realized by permanent automatic mechanisms located in the pieces of equipment of the subscriber basic access. These automatic mechanisms are continuously operational during the active period of the subscriber basic access. They are designed to detect malfunctioning of particular items, e.g. power supply, quality level of transmission, incoming signal, frame alignment.

The continuous automatic supervision mechanism should be in operation even if there is no subscriber installation connected to the T reference point. For this, it must be possible for the digital section to be placed in a state where the automatic supervision can be performed continuously although the T reference point may not be capable of full activation according to Recommendation I.430 [7].

3.2.1.2 Digital section functions

Functions, which are allocated to the digital section are listed below:

- detection of loss of frame alignment within the digital system;
- detection of loss of frame alignment on the user-network interface as defined in Recommendation I.430 [7];
- supervision of the power feeding;
- transmission performance monitoring.

Note – In case the digital section has its own failure detection mechanism, failure indication signals may be sent to, and received by, the local exchange termination. Alternatively, the detection mechanisms are included in the exchange termination.

3.2.1.3 Transmission performance monitoring mechanisms

Performance monitoring is provided in both directions of transmission. Specifically there will be error detection in each direction computed across the digital signal, for example, with a CRC or other error detection methods.

Transmission errors detected at the LT are converted to Near-End Error (NEE) indications. Transmission errors detected at the NT are converted to Far-End Error (FEE) indications and sent back to the LT. This enables performance for both directions to be assessed by the Administration.

A function of the C-channel (see Recommendation G.960 [6]) may provide support of maintenance functions such as loopback activation and performance monitoring data gathering.