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MAINTENANCE: INTERNATIONAL DATA TRANSMISSION SYSTEMS

MAINTENANCE OF INTERNATIONAL LEASED CIRCUITS THAT ARE SUPPORTED BY INTERNATIONAL DATA TRANSMISSION SYSTEMS

ITU-T Recommendation M.1385

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation M.1385 was prepared by the ITU-T Study Group IV (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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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ABSTRACT

This Recommendation considers the maintenance of leased circuits with a digital interface presentation at renters' premises that are supported by an international data transmission system.

KEYWORDS

Fault localization, fault reporting, international data transmission systems, international leased circuits, maintenance.

MAINTENANCE OF INTERNATIONAL LEASED CIRCUITS THAT ARE SUPPORTED BY INTERNATIONAL DATA TRANSMISSION SYSTEMS

(Helsinki, 1993)

1 General

1.1 Introduction

This Recommendation is only applicable to international leased circuits that are supported by an international data transmission system.

The requirements of this Recommendation are intended to ensure effective maintenance of international leased circuits.

The Recommendation is primarily applicable to leased circuits that do not incorporate an in-service performance monitoring capability. It is assumed that maintenance intervention tests will be performed with the circuit withdrawn from service.

Recommendation M.1380 [10] covers bringing-into-service issues for leased circuits that are supported by an international data transmission system.

This Recommendation addresses the maintenance procedures for leased circuits with a digital interface presentation at renters' premises. For circuits with an analogue presentation, general maintenance procedures will be as described in Recommendation M.1060.

Where the fault reporting point for an international leased circuit is the same as that for the associated international data transmission system, the requirements of this Recommendation should be considered in conjunction with those of Recommendation M.1375 [9].

1.2 Terminology

Recommendation M.1300 [6] provides general descriptions of international data transmission systems.

Terminologies and definitions relating to this Recommendation are provided in Recommendation M.60 [1].

1.3 Performance limits and objectives

Performance limits should be consistent with those used during bringing-into-service. See Recommendation M.1380 [10]. For short duration tests the limits given in clause 4/M.1340 [7] are appropriate. For all performance tests described in this Recommendation, the Errored Second (ES) and Severely Errored Second (SES) limits should be met simultaneously for the test result to be considered acceptable.

1.4 Maintenance records

Administrations should ensure that up to date information is held on file to assist maintenance activities. Clause 2/M.1370 [8] and clause 2/M.1380 [10] provide details of information that should be available.

During maintenance operations, reference should be made to previous test results that are applicable to the circuit under test. Original bringing-into-service test results should be available for all circuits.

2 Fault reporting procedures

2.1 Control and sub-control status

A dual control or a control and sub-control relationship will have been agreed at the bringing-into-service stage. See clause 5/M.1300 [6], item IX of clause 2/M.1370 [8] and 2.1/M.1375 [9].

Where a control and sub-control relationship exists, responsibilities will be as described in Recommendations M.80 [2], M.90 [3], M.1012 [4] and M.1013 [5].

Where a dual control relationship has been established Administrations should have agreed an effective mechanism for coordinating maintenance activities. Under this arrangement, to avoid confusion, it is essential that the terminal stations inform each other of maintenance activities as rapidly as possible.

2.2 Initial reception of a fault report

When a fault report is received (e.g. from a customer) the following information should be obtained:

- name, title and contact details for the person reporting the fault;
- time of fault report, recorded in UTC;
- designation of the faulty circuit (see Recommendation M.1400 [11]);
- symptoms of the fault;
- the observed duration of the fault prior to a report being made;
- any associated information that may assist with fault clearance.

Prior to undertaking any maintenance activity the customer should be asked to give permission for the circuit to be withdrawn from service.

The customer should be asked to confirm that his terminal apparatus is functioning correctly.

3 Fault localization

It may be useful to reference Figure 1/M.1375 [9] for guidance with fault localization.

Initial localization should seek to establish whether a fault exists and to determine if it is located within the national circuit section or elsewhere. The use of network alarm information may assist.

Where a fault is found to exist outside of the national circuit section (i.e. within the international section or distant national section) it should be referred to a fault reporting point that has responsibility for international maintenance activities. This will typically be the fault reporting point that has responsibility for the international data transmission system.

When a fault is referred to another fault reporting point, the information given in 2.2 above should be exchanged. Further localization should seek to identify the faulty element as quickly as possible.

Where fault localization is not achieved in a reasonable time, Administrations may invoke an agreed escalation procedure (see item g) of clause 2/M.1380 [10] and M.1560 [12]) to assist progress.

4 Maintenance tests

Maintenance tests should be kept as short as possible to avoid significantly extending the out-of-service time.

Any loopback facilities that may be available should be utilized when appropriate. Care must be taken to avoid the simultaneous operation of multiple loopbacks on a particular circuit. Once the need for a loopback no longer exists then care should be taken to ensure that it is removed.

The duration of maintenance intervention tests will be dependent upon the nature of the fault report that has been received. Where a report suggests that a circuit has failed completely, a short test of basic integrity should be performed. See clause 4/M.1340 [7] for suitable limits. Where a fault report suggests that there has been an overall degradation of service, but that the circuit has not failed completely, a longer duration test will be appropriate. Where a longer duration test is to be performed, Administrations should agree a suitable test date and time with the customer. The customer may wish to retain access to the circuit until a more convenient time when a substantial out-of-service period may be more tolerable. When a 24 hour test is performed, Administrations should use the same limits that were developed for initial bringing-into-service (see Recommendation M.1380 [10]).

The application and impact of in-service performance monitoring techniques upon the maintenance of international leased circuits is left for further study. Where an in-service monitoring capability is available then it can be used to assist maintenance operations following agreement between the Administrations involved.

Returning-to-service tests should be of a duration that is appropriate to the nature of fault that has been cleared. Where a fault had caused a general degradation of service a returning-to-service test with a short duration (e.g. 15 minutes) may not be appropriate and a longer term test (e.g. 1 hour or 24 hours) should be used.

References

[1] CCITT Recommendation *Maintenance terminology and definitions*, Rec. M.60.

[2] CCITT Recommendation *Control stations*, Rec. M.80.

[3] CCITT Recommendation *Sub-control stations*, Rec. M.90.

[4] CCITT Recommendation *Circuit control stations for leased and special circuits*, Rec. M.1012.

[5] CCITT Recommendation *Sub-control station for leased and special circuits*, Rec. M.1013.

[6] CCITT Recommendation *International data transmission systems operating in the range 2.4 kbit/s to 2048 kbit/s*, Rec. M.1300.

[7] CCITT Recommendation *Performance allocation and limits for international data transmission links and systems*, Rec. M.1340.

[8] CCITT Recommendation *Bringing-into-service of international data transmission systems*, Rec. M.1370.

[9] CCITT Recommendation *Maintenance of international data transmission systems*, Rec. M.1375.

[10] CCITT Recommendation *Bringing-into-service of international leased circuits that are supported by international data transmission systems*, Rec. M.1380.

[11] CCITT Recommendation *Designation for international networks*, Rec. M.1400.

[12] CCITT Recommendation *Escalation procedure for international leased circuits*, Rec. M.1560.