Title

Stage-1 and Stage-2 Descriptions

Source

Lucent Technologies

Abstract

The introduction to the GERAN stage-2 description leads the reader to believe that the document follows I.130 and Q.65. After reviewing I.130, Q.65, and the stage-2 description, Lucent has two questions:

- Where is the stage-1 description specified in I.130?

- Where are the missing pieces of the stage-2 description?

To help answer these two questions, this contribution summarizes requirements from I.130 and Q.65. It also provides recommendations.

Recommendation

1. Prepare and adopt a GERAN stage-1 description. As requirements evolve, update the description. Keep the description simple, preferably no more than a couple of pages.

2. Add sequence diagrams to the existing stage-2 description. Such diagrams are a minimum requirement for a useful stage 2.

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Figures and Drawings

Revision History

Date	Description
04 Oct 00	First release.

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1.   Introduction

§ 1 of the GERAN stage-2 description [3] states the following:

> CCITT I.130 describes a three-stage method for characterization of telecommunication services and CCITT Q.65 defines stage 2 of the method.

After reviewing I.130, Q.65, and the stage-2 description, Lucent has two questions:

- Where is the stage-1 description specified in I.130?
- Where are the missing pieces of the stage-2 description?

To help answer these two questions, §§ 2 and 3 summarize requirements from I.130 and Q.65. § 4 provides recommendations.

2.   CCITT I.130

I.130 specifies the following three-stage method for characterizing telecommunication services:

1. Describe the service from a user perspective.

2. Describe the service from a network perspective.

3. Specify protocols and network nodes.

2.1   Stage 1 – User Perspective
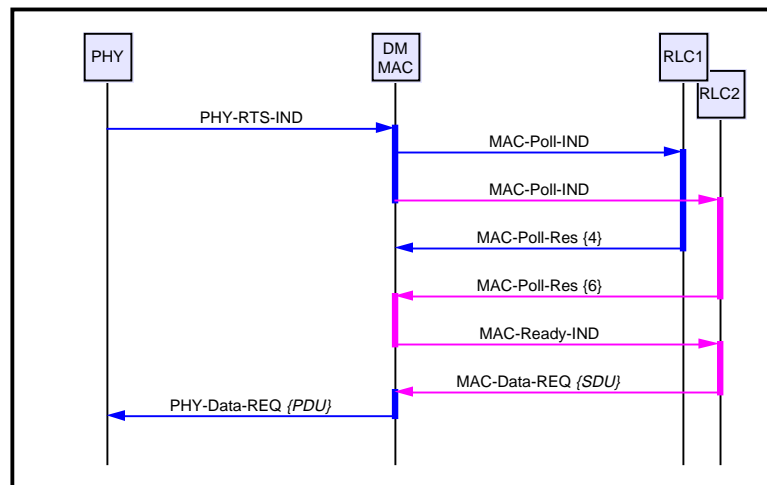
I.130 recommends 3 steps at stage 1:

1. Describe the service from the perspective of the user receiving the service and from the perspective of any other users involved in the service. Describe events in generic terms that do not constrain design.

2. Describe the static attributes of the service.

3. Describe dynamic operation of the service as perceived by the user. Use SDL (Specification and Description Language).

2.2 Stage 2 – Network Perspective

I.130 recommends 5 steps at stage 2:

1. Derive a functional model. This model typically comprises a block diagram, which shows functional blocks and their interconnections, and a functional description for each block.

2. Based on the functional model, develop information flows. These information flows typically constitute numerous sequence diagrams showing how the functional blocks communicate to provide the telecommunication service. Figure 1 shows a simple sequence diagram. The stage-2 description should explain the meaning and content of each information flow.

3. Based on the information flows, develop SDL diagrams for each functional block.

4. List actions performed by each functional block.

5. Allocate functional blocks to physical locations. Functions in separate physical locations must communicate using protocols specified in stage 3.

Figure 1   Sample Sequence Diagram

2.3 Stage 3 – Specification

I.130 recommends 2 steps at stage 3:

1. Specify messages, message content, and procedures for the relevant signaling systems, *i.e.,* specify the protocols.

2. Specify requirements for switching functions. This can be generalized to the following: specify actions for each functional block.

3.　　　ITU-T Q.65

Q.65 specifies two methods for developing stage-2 descriptions: one based on Service-Independent Building Blocks (SIBs) and the other based on Object-Oriented (O-O) techniques. Each method uses a six-step procedure. The SIB-based procedure follows:

1. Derive a functional model. This model typically comprises a block diagram, which shows functional blocks and their interconnections, and a functional description for each block. This step matches I.130 step 1.

2. Based on the functional model, develop a SIB-based description. This step is optional. It has no corresponding step in I.130.

3. Based on the functional model, develop information flows. These information flows typically constitute numerous sequence diagrams showing how the functional blocks communicate to provide the telecommunication service. The stage-2 description should explain the meaning and content of each information flow. This step matches I.130 step 2.

4. List actions performed by each functional block. This step matches I.130 step 4.

5. Based on the information flows and actions, develop SDL (Specification and Description Language) diagrams for each functional block. This step is optional. It matches I.130 step 3.

6. Allocate functional blocks to physical locations. Functions in separate physical locations must communicate using protocols specified in stage 3. This step matches I.130 step 5.

4.   Recommendations

1.   Prepare and adopt a GERAN stage-1 description. As requirements evolve, update the description. Keep the description simple, preferably no more than a couple of pages.

2.   Add sequence diagrams to the existing stage-2 description. Such diagrams are a minimum requirement for a useful stage 2.

5. References

1.   CCITT I.130.
        Method for the Characterization of Telecommunication Services Supported by an ISDN
        and Network Capabilities of an ISDN.
        Geneva: International Telecommunication Union, 1988.

2.   ITU-T Q.65.
        Functions and Information Flows for Services in the ISDN – Methodology – The Unified
        Functional Methodology for the Characterization of Services and Network Capabilities
        Including Alternative Object-Oriented Techniques.
        Geneva: International Telecommunication Union, 2000.

3.   TSGG 01(00)0471.
        GERAN Overall Description – Stage 2.
        Helsinki: GERAN Workshop, August 2000.