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B-IF2.00-03-TS

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History of Revised Versions

Version	Date	Outline
01	April 17, 1996	Established
01	Dec. 17, 1996	• Document No. is changed. (Formerly IF2.00) • Document title is changed. (Formerly General Description of Personal Handy-Phone System Public Cell Station-ISDN Interface
02	April 21, 1997	Sub clause 3.3 is added.
03	July 31, 1998	• Adding of description of CS Type 2 and error correction.

Public Personal Handy-Phone System: General Description of Interface Specifications between Public Cell Station and ISDN-based PHS Switching Center

Contents

1. General

This chapter describes the general information and principles about B-IF2.0x series Interface specifications of Personal Handy -Phone System. The current B-IF2.0x series interface specifications are constructed with follows.

B-IF2.00 : Public Personal Handy-Phone System: General Description of Interface Specifications between Public Cell Station and ISDN-based PHS Switching Center

This document include the general information and the common principles of B-IF2.0x series.

B-IF2.01 : PHS Service Control Procedures
This document is based on ITU-T Recommendation Q.932.

B-IF2.02 : Layer 3 specification
This document is based on ITU-T Recommendation Q.931.

B-IF2.03 : Layer 2 specification
This document is based on ITU-T Recommendation Q.921.

B-IF2.04 : Layer 1 specification of Basic Rate Interface
This document is based on ITU-T Recommendation I.430.

B-IF2.05 : Layer 1 specification of Primary Rate Interface
This document is based on ITU-T Recommendation I.431.

B-IF2.06: Digital Transmission System on Metallic Local Line for ISDN Basic Rate Access
This document is based on ITU-T Recommendation G.961.

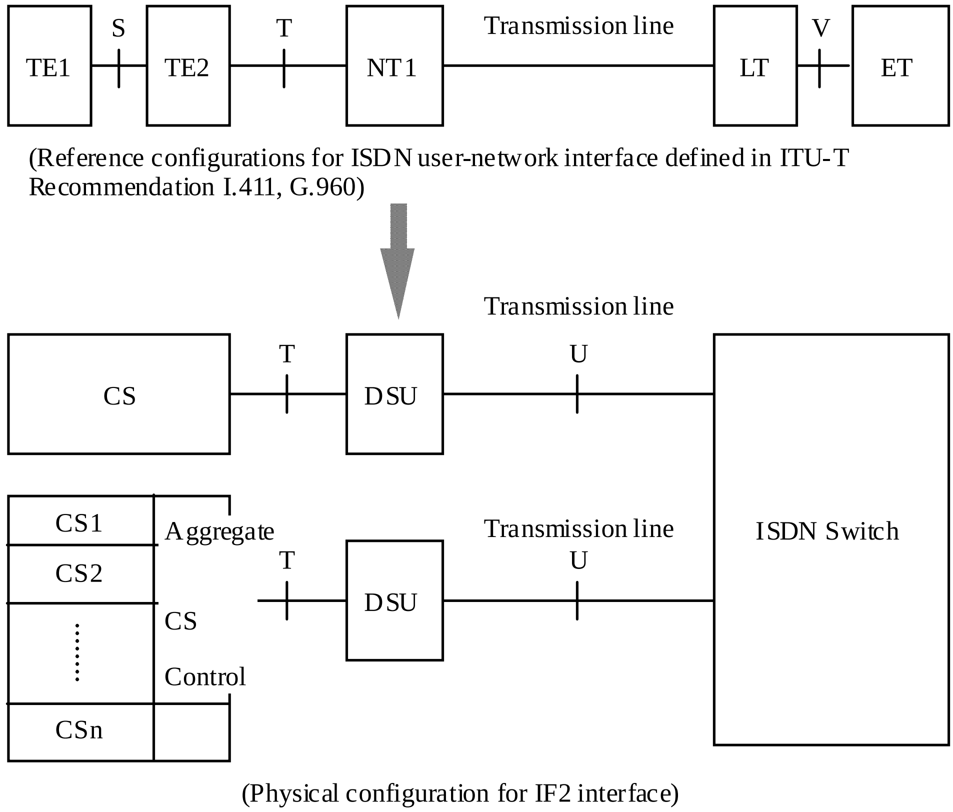
2. Principles

All of B-IF 2.0x PHS interface specification documents have following principles.

i) Interface specification allows to connect the Multi-vendor's CS to same SW.
ii) Interface specification allows to connect the Multi-operator's SW to same CS.
iii) Interface specification allows to use same CS in any PHS networks.
iv) Interface specification allows to use same SW in any PHS networks.
v) Interface specification allows to evolve CS and SW separately.
vi) B-IF 2.0x PHS Interface specifications allow to support all PHS services.

3. Network Model and Reference Points

Network Model and Reference Points of IF2 which uses ISDN interfaces is based on ITU-T Recommendation I.411 and G.960. Figure 1-1/B-IF0.00 shows this Network Model and Reference Points, referring the ITU-T Recommendations. In IF2 of this documents(B-IF2.0x series), "T" reference point indicates the interface between CS and DSU, "U" reference point (BRI only), is called "transmission line" in ITU-T Recommendation G.960, indicates the interface between DSU and ISDN Switch (LT).



Reference point

NT1 Network termination 1 defined in Recomendation ITU-T I.411
NT2 Network termination 2 defined in Recomendation ITU-T I.411
TE Terminal equipment defined in Recomendation ITU-T I.411
LT Line termination defined in Recomendation ITU-T G.960
ET Exchange termination

Figure 3-1/B-IF2.00 IF2 Network Model and Reference Points

3.1 Protocol Architecture Model on IF2 Basic Rate Interface

The concepts, terminology, overview and description, of IF2 layer 1, 2 and 3, are conformed to ITU-T Recommendations. The other issues also meet to ITU-T Recommendations. Layer 1 is specified based on ITU-T Recommendation I.430 in B-IF2.04 and G.961 in B-IF2.06 PHS interface specification document. Layer 2 is based on ITU-T Recommendation Q.921 in B-IF2.03 PHS interface specification document. Layer 3 is based on ITU-T Recommendation Q.931 and Q.932, and Layer 3 is specified in more detail to implement the PHS specific functions in B-IF2.02 and B-IF2.01 PHS interface specification document. This layer 3 descriptions is in help for operator more easily to implement the PHS services. These Layer specifications describe the PHS service control procedures between PHS public cell station and ISDN.

Figure 3-2 shows the Protocol Architecture Model on IF2 which uses ISDN basic rate interfaces.

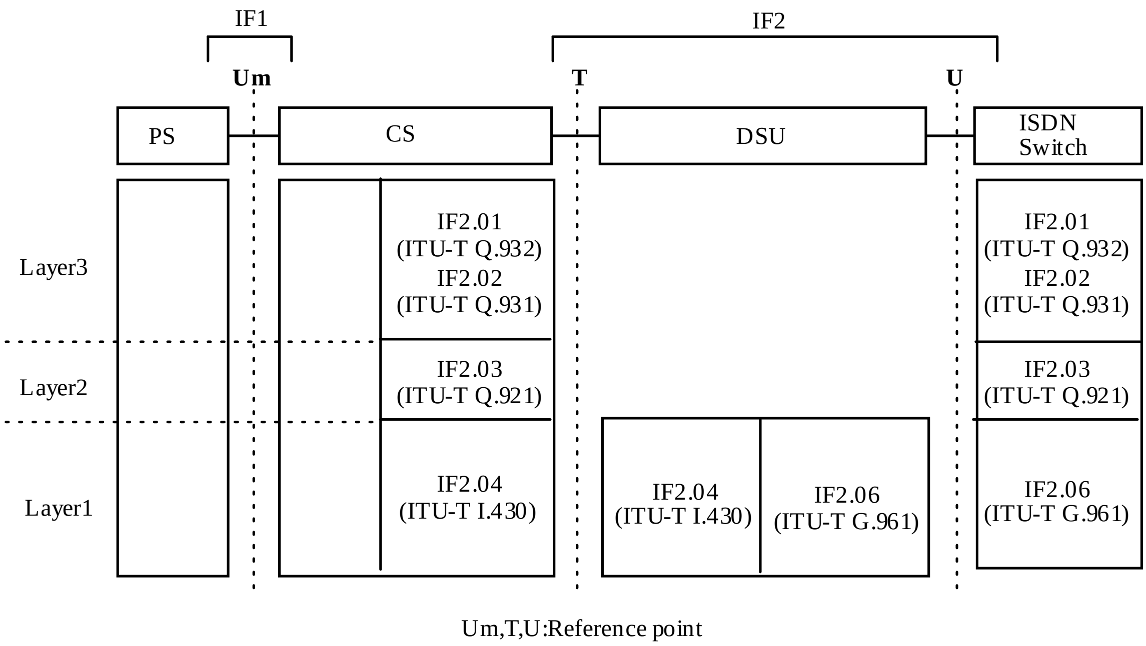


Figure 3-2/B-IF2.00 Protocol Stack of BRI

The specification of ITU-T Recommendation I.411 is modified the one point that PHS be able to use a D-channel commonly, at multi-BRI connected environment. This environment and the modification are indicated in Figure 3-3. Figure 3-3 is the example of three BRIs connected environment and upper D-channel is used commonly for three BRIs. Maximum number of BRI for single D-channel needs to be specified. It is suggested to be eight.

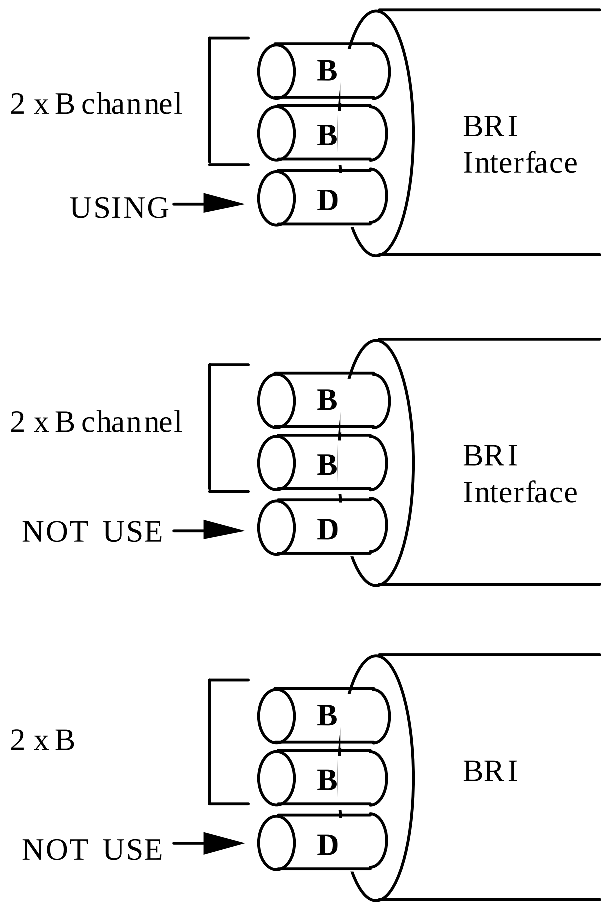
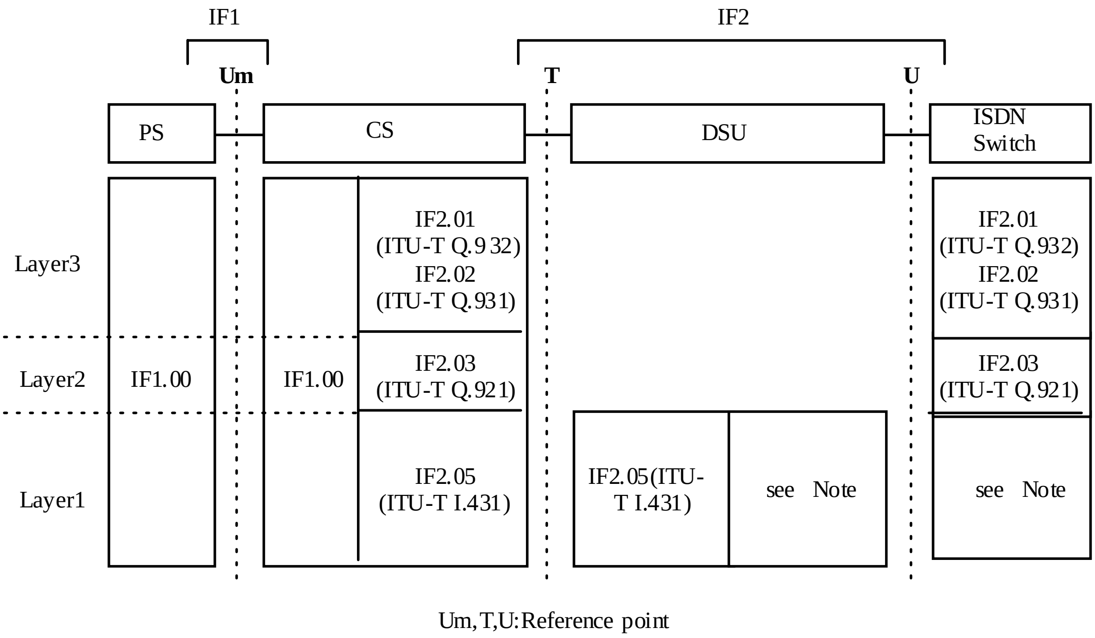


Figure 3-3/B-IF2.00 D-channel usage at multi-BRI connected environment

3.2. Protocol Architecture Model on IF2 Primary Rate Interface

The concepts, terminology, overview and description, of IF2 layer 1, 2 and 3, are conformed to ITU-T Recommendations. The other issues also meet to ITU-T Recommendations. Layer 1 is specified based on ITU-T Recommendation I.431 in B-IF2.05 PHS interface specification document. Layer 2 is based on ITU-T Recommendation Q.921 in B-IF2.03 PHS interface specification document. Layer 3 is based on ITU-T Recommendation Q.931 and Q.932, and Layer 3 is specified in more detail to implement the PHS specific functions in B-IF2.02 and B-IF2.01 PHS interface specification document. This layer 3 description is in help for operator more easily to implement the PHS services. These Layer specifications describe the PHS service control procedures between PHS public cell station and ISDN.
Figure 3-4 shows the Protocol Architecture Model on IF2 which uses ISDN primary rate interfaces.



Note: "U" referent point interface is decided from the specification of each country and/or each region

Figure 3-4/B-IF2.00 Protocol Stack of PRI

The usage of multi-PRI connected environment is based on ITU-T Recommendation I.411. This environment is indicated in Figure 3-5 and Figure 3.6. Figure 3-5 is the example of two PRIs connected environment and upper D-channel is used commonly for two PRIs. Figure 3-6 is the example of BRI and PRI connected environment and upper D-channel is used commonly for two interfaces. Maximum number of PRI for single D-channel needs to be specified. It will be set for further study.

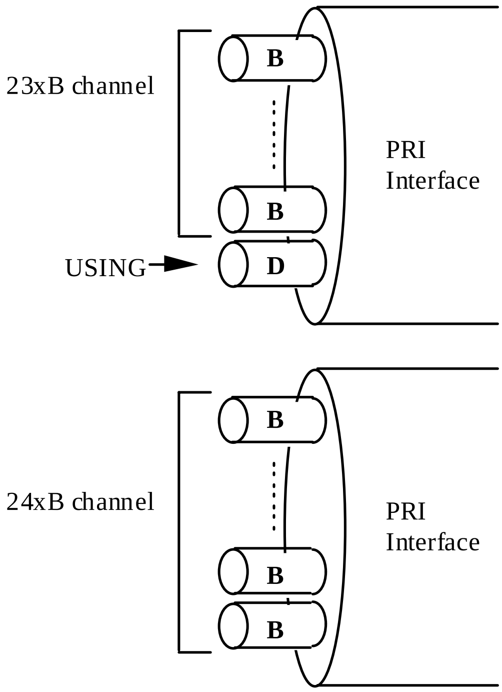


Figure 3-5/B-IF2.00 D-channel usage at multi-PRI connected environment

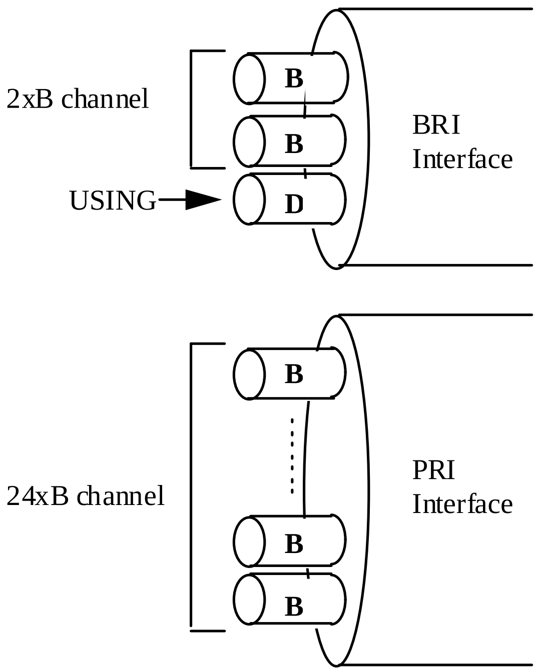


Figure 3-6/B-IF2.00 D-channel usage at BRI and PRI connected environment

3.3 IF2 combined with V5 Interface

V5 interface specified in ITU-T Recommendation Q.964 (V5.1) can be applied on the point between CS and Local Exchange (public PHS network).

Figure 3-X/B-IF2.00 shows the protocol architecture model on IF2 with V5 interface. Layer 1 to Layer 3 on V5 point between Access Network (AN) and Local Exchange Adapter (LEA) are specified based on ITU-T Recommendation Q.964. As for T and/or U reference point between CS and AN, Layer 1 is based on ITU-T Recommendation I.430 in B-IF2.04 document, Layer 2 is based on ITU-T Recommendation Q.921 in B-IF2.03 document, Layer3 is based on ITU-T Recommendation Q.931 and Q.932 in B-IF2.02 and B-IF2.01 document. The same specification is applied on T and/or U reference point between LEA and LE as what is applied on the point between CS and AN.

Layer 2 and Layer 3 information from/to CS is carried transparently to/from LE through AN, V5 point and LEA by using LAPV5-EF. Layer 2 (LAPV5-DL) and Layer 3 on AN and/or LEA are used only for control of user ports.

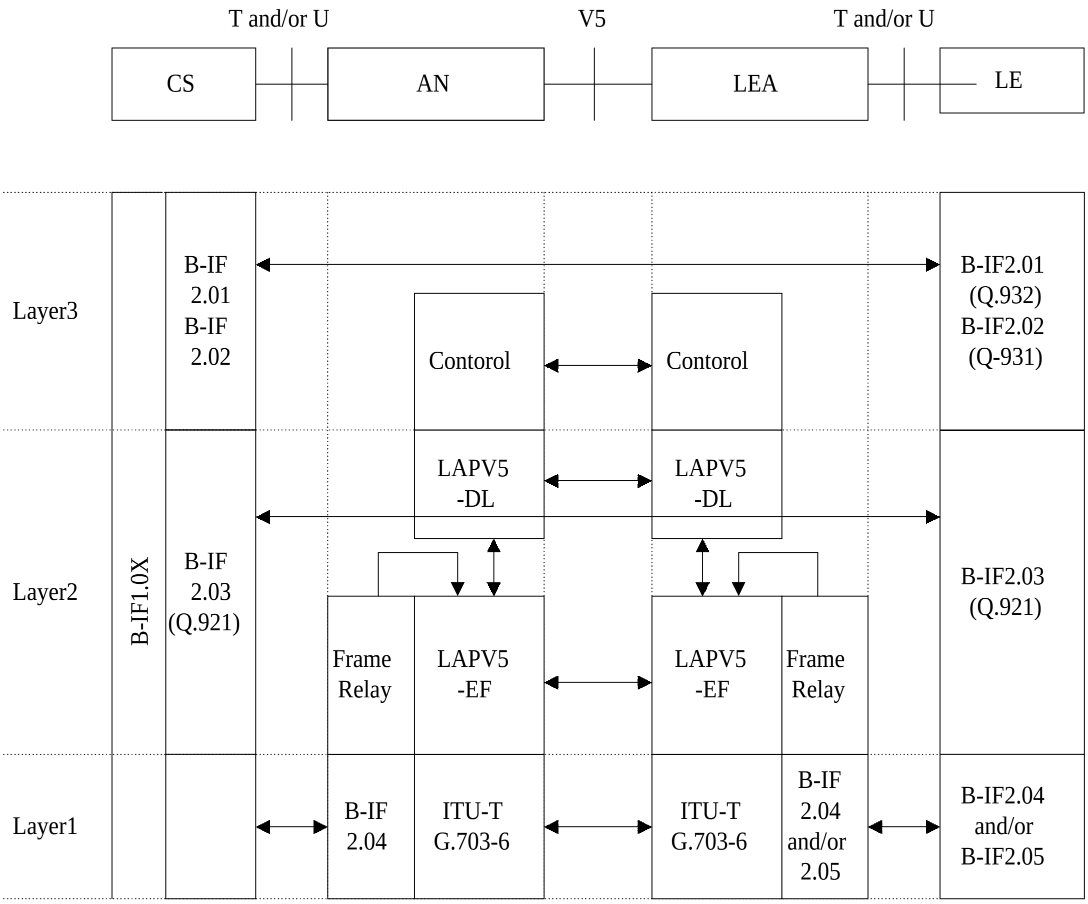


Figure 3-X/B-IF2.00 Protocol Architecture Model on IF2 with V5 Interface

4. PHS service procedure

PHS service procedures is based on ITU-T Recommendation Q.932 in B-IF2.01 PHS interface specification document. These procedures are described more real to meet PHS service procedures are as follows:

i) Handover procedure
ii) DTMF signal transmission procedure
iii) Authentication procedure
iv) Location Registration procedure

This specification have capability of the expansion that an operator be able to develop the own unique service procedure use this specification. Message sequence examples are in Appendix A of this document.

If you need more general information about PHS service, you have to read Svx.xx documents.

5. 32kbit/s unrestricted digital

"32kbit/s unrestricted digital" means that a digital communication is implemented instead of ADPCM information on PHS 32kbit/s traffic channel of PHS common air interface. The one of the implement methods is described on JT-Q931 (Draft) of TTC (Telecommunication Technology Committee). PHS system will be able to use any other methods meet with ITU-T Q.931.

6. Others

When you refer ITU-T ISDN documents, "ISDN user-network interface" is used as PHS Public Cell Station (CS)-network interface. Please take care this word conversion principle.

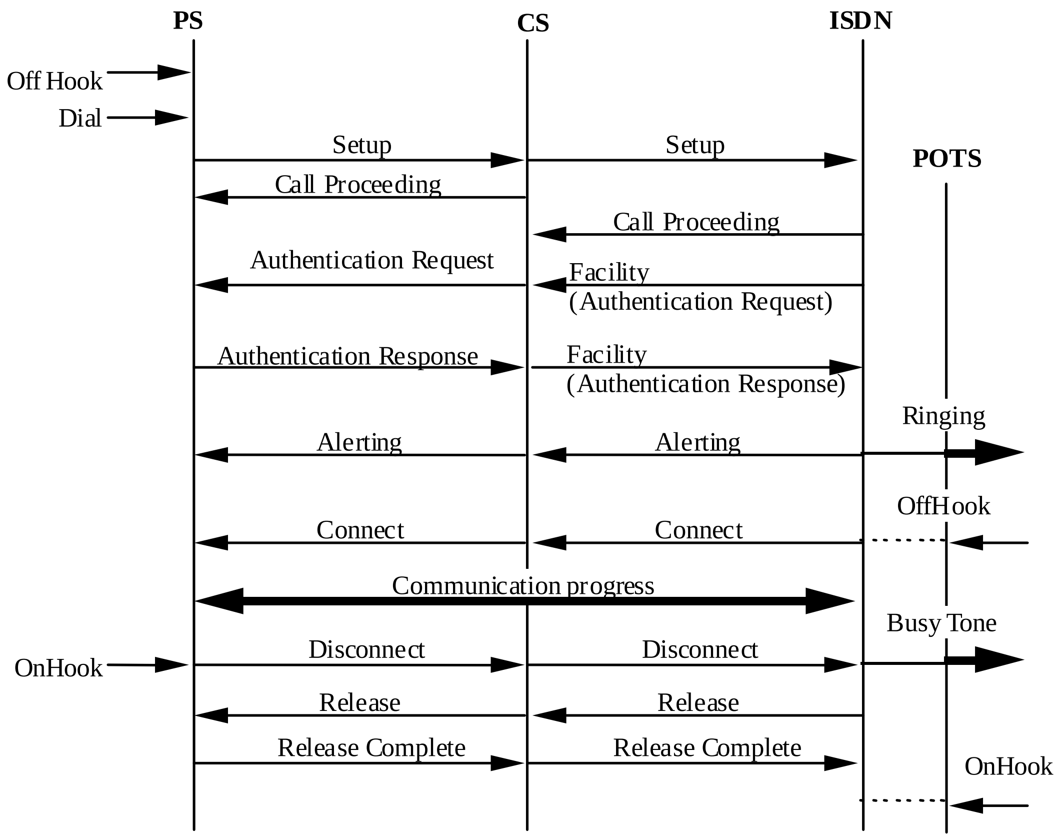
Appendix A

A.1 Message sequence examples

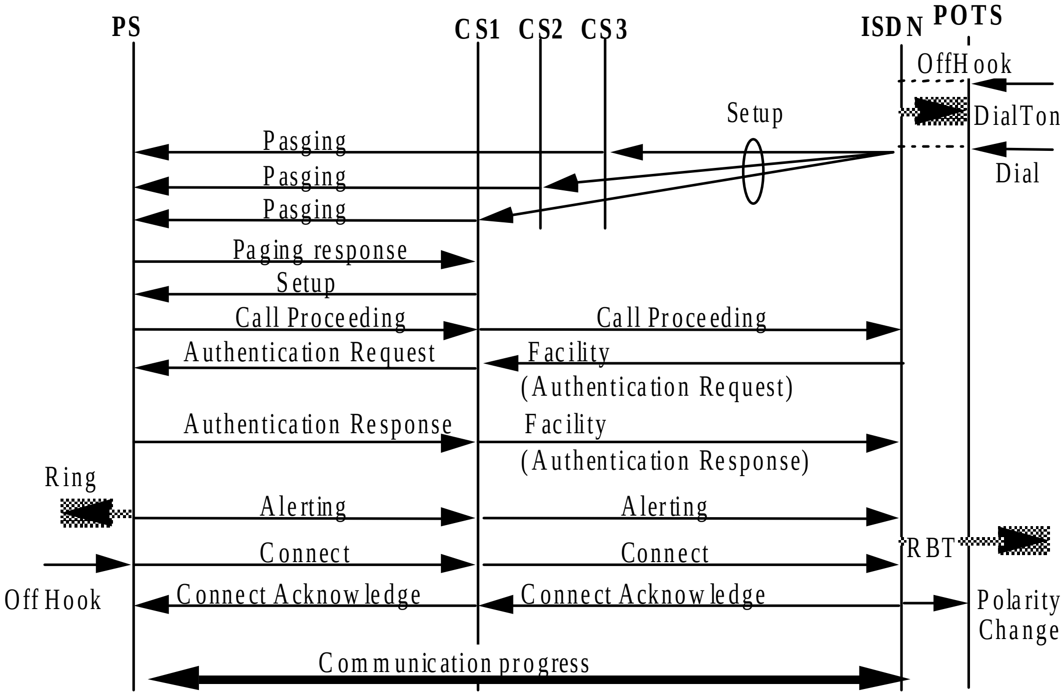
This sub-clause explains typical message sequences. The message sequences are explanatory purpose only.

This section describes the authentication procedure for CS Type 1.
The FACILITY messages used in the authentication procedure described in this section are not applicable to CS Type 2, because the authentication is not realized using IF2 in CS Type 2.

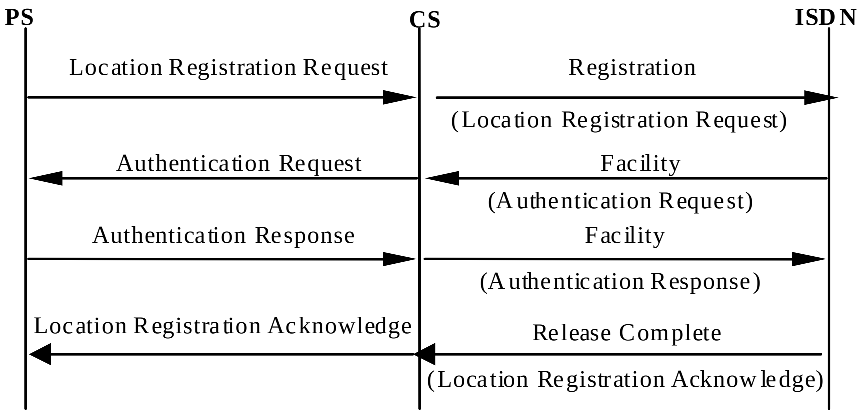
A.1.1. Outgoing Call (included Disconnect Sequence)



A.1.2. Incoming Call



A.1.3. Location Registration



A.1.4. Handover