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SERIES Q: SWITCHING AND SIGNALLING

**Technical Report TRQ.2815: Requirements for
interworking BICC/ISUP network with
originating/destination networks based on
Session Initiation Protocol and Session
Description Protocol**

ITU-T Q-series Recommendations – Supplement 45

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Supplement 45 to ITU-T Q-series Recommendations

Technical Report TRQ.2815: Requirements for interworking BICC/ISUP network with originating/destination networks based on Session Initiation Protocol and Session Description Protocol

Summary

This Supplement to ITU-T Q-Series Recommendations is a technical report on the procedures, information flows and information elements needed to interwork Bearer Independent Call Control (BICC) peer-to-peer protocol (i.e., ITU-T Rec. Q.1902) and ISDN User Part (ISUP) protocol (i.e., ITU-T Recs Q.761-Q.764, Q.73y.x, Q.765.x, Q.769.x), with Session Initiation Protocol (SIP) and Session Description Protocol (SDP) at the BICC Interface Serving Node (ISN). The SIP/SDP is assumed on a "Network-to-Network Interface" (NNI) between the BICC/ISUP network and a SIP network, which is an originating or terminating/destination network.

Source

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FOREWORD

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Supplement 45 to ITU-T Q-series Recommendations

Technical Report TRQ.2815: Requirements for interworking BICC/ISUP network with originating/destination networks based on Session Initiation Protocol and Session Description Protocol

1 Scope

This Supplement provides the requirements for specifying the interworking between Bearer Independent Call Control (BICC) peer-to-peer protocol (i.e., ITU-T Rec. Q.1902) and ISDN User Part (ISUP) protocol (i.e., ITU-T Recs Q.761-Q.764, Q.73y.x, Q.765.x, Q.769.x), with Session Initiation Protocol (SIP) as well as Session Description Protocol (SDP) at the BICC Interface Serving Node (ISN). The SIP/SDP is assumed on a "Network-to-Network Interface" (NNI) between the BICC/ISUP network and a SIP-based network, which is an originating, transit, or a terminating/destination network. The interworking should support only services or capabilities commonly applicable to both networks.

The scope of this Supplement is illustrated in Figure 1-1, with an NNI interface between the SIP/SIP-I network and the BICC/ISUP network.¹

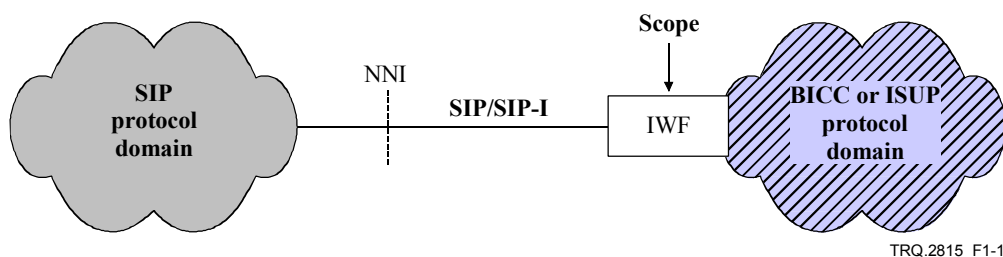


Figure 1-1 – Interface reference model

The following NNI configurations are supported, with various gateway types:

- SIP to BICC [IP or ATM];
- BICC [IP or ATM] to SIP;
- SIP to ISUP;
- ISUP to SIP;
- ISUP to SIP-I;
- SIP-I to ISUP;
- SIP-I to BICC;
- BICC to SIP-I.

The IWF is supported in the following exchanges:

- Originating Exchange;
- Intermediate National Exchange;
- Outgoing International Exchange;
- Intermediate International Exchange;

¹ SIP-I includes the MIME encoding of the ISUP, not BICC.

- Incoming International Exchange;
- Destination Exchange; or
- Standalone Unit.

Interworking with access protocols at the UNI is done via a concatenation with ISUP.

2 References

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3 Abbreviations

This Supplement uses the following abbreviations:

ANI	Access Network Interface
ATM	Asynchronous Transfer Mode
BCF	Bearer Control Function
BICC	Bearer Independent Call Control
GW	Gateway
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISUP	ISDN User Part
MIME	Multipurpose Internet Mail Extensions
NNI	Network-Network Interface
RFC	Request For Comments
RTP	Real Time Protocol
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SIP-I	SIP with the MIME encoding of ISUP
SN	Serving Node
UNI	User Network Interface

4 Definitions

Definitions for additional terminology used in this interworking Supplement are as follows:

4.1 incoming or outgoing: This term is used to indicate the direction of a call (not signalling information) with respect to a reference point.

4.2 incoming SIP or BICC/ISUP [Network]: The network, from which the incoming calls are received, uses the SIP or BICC/ISUP protocol. Without the term "network", it simply refers to the protocol.

4.3 Incoming Interworking Function (I-IWF): A functional entity which terminates incoming calls using SIP and originates outgoing calls using BICC or ISUP protocols.

4.4 Outgoing Interworking Function (O-IWF): A functional entity which terminates incoming calls using BICC or ISUP protocols and originates outgoing calls using the SIP.

4.5 Adjacent SIP Node (ASN): A SIP node (SIP Proxy) that has established a direct trust relation (association) with Incoming or Outgoing IWF entities. A SIP Proxy is defined in accordance with RFC 2543.

4.6 Outgoing SIP or BICC/ISUP [Network]: The network, to which the outgoing calls are sent, uses the SIP or BICC/ISUP protocol. Without the term "network", it simply refers to the protocol.

4.7 SIP Pre-condition: Indicates the support of SIP "precondition procedure" as defined in draft-ietf-sip-manyfolks-resource.

4.8 SIP-I: The use of SIP with a message body that encapsulates ISUP information.

4.9 MIME Type: See RFC 3204 [9].

For additional definitions see: ITU-T Rec. Q.1902.2, RFC 3261 and RFC 2327.

5 SIP interworking architectures

5.1 SIP to BICC [IP or ATM]

Figure 5-1 illustrates a Type 1 Gateway for a SIP to BICC NNI, where SIP IP bearer and BICC IP or ATM bearers terminate at the Type 1 Gateway.

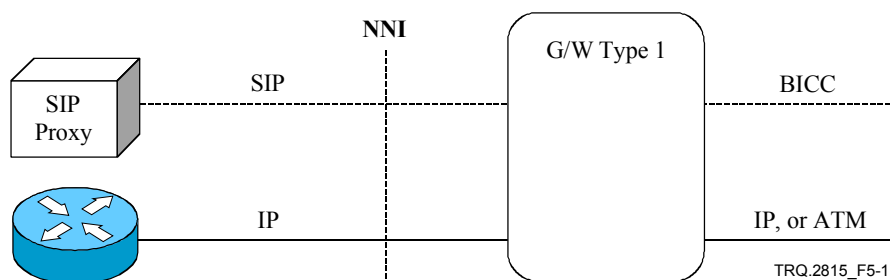


Figure 5-1 – SIP to BICC [IP or ATM] NNI, with Type 1 Gateway

Figure 5-2 illustrates a Type 2 Gateway for a SIP to BICC NNI, where the bearers do not terminate at the Type 2 gateway (e.g., CMN).