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TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU



# SERIES Q: SWITCHING AND SIGNALLING

# Technical report TRQ.2000: Roadmap for the TRQ.2xxx-series technical reports

ITU-T Q-series Recommendations – Supplement 9

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### **Supplement 9 to ITU-T Q-series Recommendations**

# Technical report TRQ.2000: Roadmap for the TRQ.2xxx-series technical reports

#### **Summary**

This Supplement specifies the index for the TRQ.2xxx-series Technical Reports.

#### Source

Supplement 9 to ITU-T Q-series Recommendations was prepared by ITU-T Study Group 11 (2001-2004) and approved under ITU-T Recommendation A.13 (10/2000) procedure on 1 March 2002.

#### FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

#### NOTE

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

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### **Supplement 9 to ITU-T Q-series Recommendations**

# Technical report TRQ.2000: Roadmap for the TRQ.2xxx-series technical reports

#### 1 Scope

The scope of this Supplement is to provide an overall index for the TRQ.2xxx-series of Technical Reports which will be published as supplements to the Q series.

#### 2 References

The following Technical Reports and other references contain provisions which, through reference in this text, constitute provisions of this Supplement. At the time of publication, the editions indicated were valid. All Supplements and other references are subject to revision; users of this Supplement are therefore encouraged to investigate the possibility of applying the most recent edition of the Supplements and other references listed below. A list of the currently valid ITU-T Recommendations and Supplements is regularly published.

- ITU-T Q-series Recommendations – Supplement 7 (1999), *Technical Report TRQ.2001: General aspects for the development of unified signalling requirements.* 

#### 3 Definitions

This Supplement defines the following terms:

**3.1** call: An end-to-end communications service between two or more call party end points, or between one call party end point and its serving node.

**3.2 network connection**: An ATM network connection of topology types 1 to 6 as defined in Table A.1 of Supplement 7 to ITU-T Q-series Recommendations, Technical Report TRQ.2001.

**3.3 transport connection:** An AAL type 2 connection of topology type 1 as defined in Table A.1 of Supplement 7 to ITU-T Q-series Recommendations, Technical Report TRQ.2001.

#### 4 Abbreviations

This Supplement uses the following abbreviations:

AAL ATM Adaptation Layer

ATM Asynchronous Transfer Mode

#### 5 Overview

This Supplement acts as an index or roadmap for the TRQ.2xxx series of Technical Reports. In addition, this Supplement provides a cross-index of supported capabilities against signalling requirement Supplements.

#### 6 Roadmap

The organization of the Technical Report supplements within the scope of the TRQ.2xxx series are as follows:

TRQ.200x General documents that are used to specify the common signalling requirement elements that are referenced in other TRQ-series reports.

TRQ.201x Interworking requirements between various signalling applications

TRQ.21xx Coordinated call control and bearer control signalling requirements

- TRQ.22xx Call control signalling requirements
- TRQ.23xx Bearer control signalling requirements
- TRQ.24xx Transport control signalling requirements
- TRQ.25xx Vertical inter control domain signalling requirements
- TRQ.27xx Access Network Control Signalling Requirements

The detailed roadmap of the TRQ Supplements series is contained in Table 6-1.

TRQ series No.	Title of Supplement
TRQ.2000	Roadmap for the TRQ.2xxx-series technical reports
TRQ.2001	General aspects for the development of unified signalling requirements
TRQ.2002	Information flow elements
TRQ.2010	B-ISDN signalling interworking requirements
TRQ.210x	Coordinated call control and bearer control signalling requirements – Root-party coordinated call and bearer control
TRQ.211x	Coordinated call control and bearer control signalling requirements – Leaf-party coordinated call and bearer control
TRQ.212x	Coordinated call control and bearer control signalling requirements – Third-party coordinated call and bearer control
TRQ.213x	Coordinated call control and bearer control signalling requirements for leaf-initiated join service
TRQ.214x	Coordinated call control and bearer control signalling requirements for the support of narrowband services via broadband transport technologies – Originating party call and bearer coordinated call and bearer control
TRQ.220x	Call control signalling requirements – Party call control
TRQ.223x	Call control signalling requirements – Join Call service
TRQ.230x	Bearer control signalling requirements – Root-party bearer control
TRQ.231x	Bearer control signalling requirements – Leaf-party bearer control
TRQ.232x	Bearer control signalling requirements – Third-party bearer control
TRQ.240x	Transport control signalling requirements – Signalling requirements for AAL type 2 link control
TRQ.241x	Transport control signalling requirements – Signalling requirements for IP bearer control
TRQ.250x	Vertical inter control domain signalling requirements – Signalling requirements for Call Bearer Control Interface
TRQ.270x	Requirements for Signalling in Access Networks that Support BICC

Table 6-1 – Roadmap of Technical Reports

#### 7 Signalling capabilities to Supplement cross-reference

Mapping of Signalling Capabilities to TRQ Supplements of the 2000 series Technical Reports are as follows.

# 7.1 Coordinated call control and bearer control signalling requirements – Root-party coordinated call and bearer control

Table 7-1 describes the signalling capabilities that are contained in TRQ.2100.

	Network connection type
Coordinated call and network connection establishment	
Two-party call establishment with one or more network connections	Types 1, 2, 3 and 5
Three- or more-party call establishment with one or more network connections	Types 2, 3, and 5
Multicast address establishment with one or more network connections	Types 2, 3 and 5
Any-cast address establishment with one or more network connections	Type 1
Addition of one or more new parties to an existing call with attachment to existing or new network connections	
Addition of one or more new parties with attachment to one or more existing connections	Types 2, 3 and 5
Addition of one or more new parties with attachment to one or more new network connections	Types 2, 3 and 5
Release one or more parties and their associated network connection branches from the call	
Release a party and its associated network connection branches from a two-party call	Types 1, 2, 3 and 5
Release one or more parties and their associated network connection branches from a three- or more-party call	Types 1, 2, 3 and 5
Call release with one or more parties and their associated network connection	
Release of a single-party call and its associated connections, requested by call owner	Types 1, 2, 3 and 5
Release of a two-party call and its associated connections, requested by call owner	Types 1, 2, 3 and 5
Release of a multi-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a two-party call and its associated connections requested by a non-call owner party	Types 1, 2, 3 and 5
Release of a multi-party call and its associated connections, requested by a non- call owner party	Types 1, 2, 3 and 5

### Table 7-1 – Root-party Call Control Capabilities

# 7.2 Coordinated call control and bearer control signalling requirements – Leaf-party coordinated call and bearer control

Table 7-2 describes the signalling capabilities that are contained in TRQ.2110.

	Network connection type
Coordinated call and network connection establishment	
Two-party call establishment with one or more network connections	Types 1, 2, 3 and 5
Three- or more-party call establishment with one or more network connections	Types 2, 3, and 5
Multicast address establishment with one or more network connections	Types 2, 3 and 5
Addition of one or more new parties to an existing call with attachment to existing or new network connections	
Addition of one or more new parties with attachment to one or more existing connections	Types 2, 3 and 5
Addition of one or more new parties with attachment to one or more new network connections	Types 2, 3 and 5
Release one or more parties and their associated network connection branches from the call	
Release a party and its associated network connection branches from a two-party call	Types 1, 2, 3 and 5
Release one or more parties and their associated network connection branches from a three- or more-party call	Types 1, 2, 3 and 5
Call release with one or more parties and their associated network connection	
Release of a single-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a two-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a multi-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a two-party call and its associated connections requested by a non-call owner party	Types 1, 2, 3 and 5
Release of a multi-party call and its associated connections, requested by a non- call owner party	Types 1, 2, 3 and 5

### Table 7-2 – Leaf-party Call Control Capabilities

# 7.3 Coordinated call control and bearer control signalling requirements – Third-party coordinated call and bearer control

Table 7-3 describes the signalling capabilities that are contained in TRQ.2120.

	Network connection type
Coordinated call and network connection establishment	
Two-party call establishment with one or more network connections	Types 1, 2, 3 and 5
Three- or more-party call establishment with one or more network connections	Types 2, 3 and 5
Multicast address establishment with one or more network connections	Types 2, 3 and 5
Addition of one or more new parties to an existing call with attachment to existing or new network connections	
Addition of one or more new parties with attachment to one or more existing connections	Types 2, 3 and 5
Addition of one or more new parties with attachment to one or more new network connections	Types 2, 3 and 5
Release one or more parties and their associated network connection branches from the call	
Release a party and its associated network connection branches from a two-party call	Types 1, 2, 3 and 5
Release one or more parties and their associated network connection branches from a three- or more-party call	Types 1, 2, 3 and 5
Call release with one or more parties and their associated network connection	
Release of a single-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a two-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a multi-party call and its associated connections, requested by the call owner	Types 1, 2, 3 and 5
Release of a two-party call and its associated connections requested by a non-call owner party	Types 1, 2, 3 and 5
Release of a multi-party call and its associated connections, requested by a non- call owner party	Types 1, 2, 3 and 5

### Table 7-3 – Third-party Call Control Capabilities

# 7.4 Coordinated call control and bearer control signalling requirements – Leaf-initiated join coordinated call and bearer control

Table 7-4 describes the signalling capabilities that are contained in TRQ.2130.

	Network connection type
Coordinated call and network connection establishment	
Leaf-initiated call registration	Types 1, 2, 3 and 5
Leaf-initiated call creation	Types 1, 2, 3 and 5 Types 2, 3 and 5
Addition of one or more new parties to an existing call with attachment to existing connections	
Leaf Party Request to join active LIJ call and bearer	Types 2, 3 and 5
Release one or more parties and their associated network connection branches from the call	
Removal of leaf party requested by root party	Types 1, 2, 3 and 5
Leaf party requests to be released from the LIJ call	Types 1, 2, 3 and 5
Call release with one or more parties and their associated network connection	
LIJ call and bearer clearing by root party	Types 1, 2, 3 and 5

### Table 7-4 – Leaf-Initiated Join Call Control Capabilities

# 7.5 Signalling requirements for the support of narrowband services via broadband transport technologies (CS-1)

Table 7-5 describes the signalling capabilities that are contained in TRQ.2140.

	Network connection type
Coordinated call and network connection establishment	
Two-party call establishment with one network connection. Establishment mode: Backwards and Forwards establishment of a new network connection or reuse of idle previously established connection	Type 1 (AAL Type 1, AAL Type 2 Bearer Transport)
Connection Codec Negotiation	
During call establishment with one network connection	Type 1 (AAL Type 1, AAL Type 2 Bearer Transport)
Connection Codec Modification	
After call and network connection have been established	Type 1 (AAL Type 1, AAL Type 2 Bearer Transport)
Call release and its associated network connection	
Release of a two-party call and its associated connection, requested by either party. Release of transport connection conditional on idle timer time-out. Idle timer time-out can be provisioned to have a value from zero to infinity	Type 1 (AAL Type 1, AAL Type 2, Bearer Transport)

#### Table 7-5 – Originating-party Call Control Capabilities

# 7.6 Signalling requirements for the support of narrowband services via broadband transport technologies – General requirements and information flows (CS-2)

Table 7-6 describes the signalling capabilities that are contained in TRQ.2141. These requirements are contained in two documents: TRQ.2141.0 contains the General requirements while the Information flows are contained in TRQ.2141.1.

	Network connection type
Coordinated call and network connection establishment	
Two-party call establishment with one network connection. Establishment mode: Backwards and Forwards establishment of a new network connection or reuse of idle previously established connection	Type 1 (AAL Type 1, AAL Type 2, Structured AAL Type 1, IP Bearer Transport)
Connection Codec Negotiation	
During call establishment with one network connection	Type 1
After call and network connection have been established including capability of modifying the network connection characteristics	(AAL Type 1, AAL Type 2, Structured AAL Type 1, IP Bearer Transport)
Connection Codec Modification	
After call and network connection have been established including capability of modifying the network connection characteristics	Type 1 (AAL Type 1, AAL Type 2, Structured AAL Type 1, IP Bearer Transport)
Mid Connection Re-direction	
After call and connection have been completed, the connection may be re-routed to the same or a different Serving Node within the network	Type 1 (AAL Type 1, AAL
After call and connection have been completed, the call and connection may be re-routed to a different party	Type 2, Structured AAL Type 1, IP Bearer Transport)
Call release and its associated network connection	
Release of a two-party call and its associated connection, requested by either party. Release of transport connection conditional on idle timer time-out. Idle timer time-out can be provisioned to have a value from zero to infinity.	Type 1 (AAL Type 1, AAL Type 2, Structured AAL Type 1, IP Bearer Transport)
Creation of an open interface between call control and bearer control	
Bearer transport independent requests, notification, and responses associated with the implementation of the call and bearer services listed above	
Multiple Call Control Entities interaction with a single BIWF called a shared BIWF capability	NA
Delayed BIWF selection when Forward establishment is used	

## Table 7-6 – Originating-party Call Control Capabilities

#### 7.7 Call control signalling requirements – Party call control

Table 7-7 describes the signalling capabilities that are contained in TRQ.2200.

	Network connection type
Call establishment without any network connections	
Establish a call with two parties	NA
Establish a call with three or more parties	NA
Addition of one or more parties without network connections to an existing call	
Add one new party to an existing call requested by any party already associated with that call	NA
Add two or more new parties to an existing call requested by any party already associated with that call	NA
Release of a party without network connections from an existing call	
Release of a party from an existing two party call	NA
Release of a party from an existing three or more party call	NA
Release of a call without Network Connections	
Release of a single-party call requested by the call owner	NA
Release of a two-party call requested by the call owner	NA
Release of a multi-party call requested by the call owner	NA
Release of a two-party call requested by a non-call owner party	NA
Release of a multi-party call requested by a non-call owner party	NA

#### Table 7-7 – Party call control capability

### 7.8 Call control signalling requirements – Join call control

Table 7-8 describes the signalling capabilities that are contained in TRQ.2230.

### Table 7-8 – Join call control capability

	Network connection type
Call establishment without any network connections	
Creation of a registered call	NA
Join a registered call with no active parties	NA
Join a call with one or more parties	NA
Release of a party without network connections from an existing call	
Release of a party from an existing registered call	NA

### 7.9 Bearer control signalling requirements – Root-party bearer control

Table 7-9 describes the signalling capabilities that are contained in TRQ.2300.

	Network connection type
Addition of one or more new network connections to an existing call requested by the party that will be the root of the new network connection(s)	
Addition of one new network connections to an existing call	Types 1, 2, 3 and 5
Addition of one or more new network connections to an existing call	Types 1, 2, 3 and 5
Attachment of one or more existing parties to one or more existing network connections requested by the party associated with the root of the existing network connection	
Attach one or more existing parties to one or more existing connections	Types 1, 2, 3 and 5
Attach one or more existing parties to one or more new connections	Types 1, 2, 3 and 5
Detachment of one or more parties from one or more connections by either the call owner, network connection owner or the party owner	
Detach a party from its associated network connection branches in a two-party call	Types 1, 2, 3 and 5
Detach one or more parties from their associated network connection branches in a three- or more-party call	Types 1, 2, 3 and 5
Removal of one or more connections from a call requested by the network requested by either the connection owner or call owner	
Removal of one or more network connections from a two-party call	Types 1, 2, 3 and 5
Removal of one or more network connections from a three- or more-party call	Types 1, 2, 3 and 5

### Table 7-9 – Root-party Call Control Capabilities

### 7.10 Bearer control signalling requirements – Leaf-party bearer control

Table 7-10 describes the signalling capabilities that are contained in TRQ.2310.

	Network connection type
Addition of one or more new network connections to an existing call requested by the party that will be the leaf of the new network connection(s)	
Addition of one new network connections to an existing call	Types 1, 2, 3 and 5
Addition of one or more new network connections to an existing call	Types 1, 2, 3 and 5
Attachment of one or more existing parties to one or more existing network connections requested by the party associated with a leaf of the existing network connection	
Attach one or more existing parties to one or more existing connections	Types 1, 2, 3 and 5
Attach one or more existing parties to one or more new connections	Types 1, 2, 3 and 5
Detachment of one or more parties from one or more connections by either the call owner, network connection owner or the party owner	
Detach a party from its associated network connection branches in a two-party call	Types 1, 2, 3 and 5
Detach one or more parties from their associated network connection branches in a three- or more-party call	Types 1, 2, 3 and 5
Removal of one or more connections from a call requested by the network	
requested by either the connection owner or call owner	
Removal of one or more network connections from a two-party call	Types 1, 2, 3 and 5
Removal of one or more network connections from a three- or more-party call	Types 1, 2, 3 and 5

### Table 7-10 – Leaf-party Call Control Capabilities

#### 7.11 Bearer control signalling requirements – Third-party bearer control

Table 7-11 describes the signalling capabilities that are contained in TRQ.2320.

	Network connection type
Addition of one or more new network connections to an existing call requested by a party that will not be attached to the new network connection(s)	
Addition of one new network connections to an existing call	Types 1, 2, 3 and 5
Addition of one or more new network connections to an existing call	Types 1, 2, 3 and 5
Attachment of one or more existing parties to one or more existing network connections requested by a party that is not attached to the existing network connection	
Attach one or more existing parties to one or more existing connections	Types 1, 2, 3 and 5
Attach one or more existing parties to one or more new connections	Types 1, 2, 3 and 5
Detachment of one or more parties from one or more connections by either the call owner, network connection owner or the party owner	
Detach a party from its associated network connection branches in a two-party call	Types 1, 2, 3 and 5
Detach one or more parties from their associated network connection branches in a three- or more-party call	Types 1, 2, 3 and 5
Removal of one or more connections from a call requested by the network requested by either the connection owner or call owner	
Removal of one or more network connections from a two-party call	Types 1, 2, 3 and 5
Removal of one or more network connections from a three- or more-party call	Types 1, 2, 3 and 5

#### Table 7-11 – Third-party Call Control Capabilities

#### 7.12 Transport control signalling requirements – Signalling requirements for AAL type 2 link control Capability Set 1

Table 7-12 describes the signalling capabilities that are contained in TRQ.2400.

#### Table 7-12 – AAL type 2 Link Control Capabilities CS-1

	Transport connection type
AAL type 2 connection establishment	
AAL type 2 connection establishment	Type 1
AAL type 2 connection release	
AAL type 2 connection release	Type 1

#### 7.13 Transport control signalling requirements – Signalling requirements for AAL type 2 link control Capability Set 2

Table 7-13 describes the signalling capabilities that are contained in TRQ.2401.

	Transport connection type
AAL type 2 connection establishment	
AAL type 2 connection establishment	Type 1
AAL type 2 connection modification	
AAL type 2 connection modification of bandwidth characteristics	Type 1
AAL type 2 connection release	
AAL type 2 connection release	Type 1

#### Table 7-13 – AAL type 2 Link Control Capabilities CS-2

# 7.14 Transport control signalling requirements – Signalling requirements Capability Set 1 for the support of IP bearer control in BICC networks

Table 7-14 describes the signalling capabilities that are contained in TRQ.2410.

	Transport connection type
IP connection establishment	
IP connection establishment via "tunnel" transported by BICC protocol	Type 1
IP connection modification	
IP connection modification of bandwidth characteristics via "tunnel" transported by BICC protocol	Type 1
AAL type 2 connection release	
IP connection implicit release without any direct bearer control commands	Type 1

#### Table 7-14 – IP Bearer Control Capabilities CS-1

# 7.15 Vertical inter control domain signalling requirements – Signalling requirements for the support of the Call-Bearer Control Interface (CS-1)

Table 7-15 describes the signalling capabilities that are contained in TRQ.2500.

	Network connection type
Successful connection establishment procedures	
Prepare termination for connection establishment	
Establish connection between two external terminations	
Reserve bearer connection between two terminations	NA
Place Termination into a send and receive communication configuration	NA
Modification of connection characteristics	
Conveyance of "tunnelled" information between two terminations	
Reuse of idle bearer connection	
Directive to reuse an idle connection in a new call & bearer action	NA
Establishment and modification of communication topologies between internal terminations	
Capability to isolate a termination from a context	
Capability to have a termination within a different context to another context	NA
Capability to modify the internal context communication arrangement	
Miscellaneous capabilities associated with a specified termination	
Echo Canceller procedures	
Tone insertion procedures	
Digit insertion procedures	NA
Announcement insertion procedures	
Digit detection procedures	
General BIWF related procedures	
BIWF service change procedures	
Call Control Unit service change procedures	NA
BIWF or Termination unavailable	NA
Auditing of BIWF service capabilities	
Network connection release capabilities	
Release of network connection associated with the originating termination	NA
Release of network connection associated with the terminating termination	INA

#### Table 7-15 – Call-Bearer Control Capabilities CS-1

#### 7.16 Requirements for Signalling in Access Networks that Support BICC

TRQ.2700 is a Technical Report on the procedures, information flows and information elements needed for supporting Access Networks in Bearer Independent Call Control (BICC). It defines the requirements for signalling to control connections across the Access Network.

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