



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.834.4

Amendment 1
(01/2004)

SERIES Q: SWITCHING AND SIGNALLING

Q3 interface

A CORBA interface specification for Broadband
Passive Optical Networks based on UML interface
requirements

Amendment 1

ITU-T Recommendation Q.834.4 (2003) – Amendment 1

ITU-T Q-SERIES RECOMMENDATIONS
SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4, 5, 6, R1 AND R2	Q.120–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.799
Q3 INTERFACE	Q.800–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1699
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2000	Q.1700–Q.1799
SPECIFICATIONS OF SIGNALLING RELATED TO BEARER INDEPENDENT CALL CONTROL (BICC)	Q.1900–Q.1999
BROADBAND ISDN	Q.2000–Q.2999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation Q.834.4

A CORBA interface specification for Broadband Passive Optical Networks based on UML interface requirements

Amendment 1

Summary

This amendment provides several enhancements to the CORBA interface specification for the management interface between a Supplier Management System and an Operator Management System managing Broadband Passive Optical Networks (BPONs). It includes changes needed for management of dynamic bandwidth allocation and automatic ranging of Optical Network Units (ONUs) and Optical Network Terminals (ONTs). It also includes additions required to adequately support testing of telephony and data services, software activity notification, and capacity management.

Source

Amendment 1 to ITU-T Recommendation Q.834.4 (2003) was approved on 13 January 2004 by ITU-T Study Group 4 (2001-2004) under the ITU-T Recommendation A.8 procedure.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. 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 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.

ITU-T
Recommendation
Q.834.4

NOTE

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

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

© ITU 2004

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

Page

1	Scope	1
2	References.....	1
3	Terms and definitions	1
3.1	Terms imported from ITU-T Rec. G.983.4	1
3.2	New terms.....	2
4	Abbreviations.....	2
5	Conventions	2
6	Enhancements to Build and Common interfaces.....	2
6.1	Modifications to clause 9.2.1.1, "buildNode"	2
6.2	Modifications to clause 9.2.1.2, "assignUserLabelsToNE"	3
6.3	Modifications to clause 9.2.1.3, "modifyNode"	3
6.4	buildTCONT.....	4
6.5	modifyTCONTParameters	4
6.6	deleteTCONT	4
6.7	Modifications to clause 9.2.1.20, "Exceptions".....	5
7	Enhancements to Test interface	5
7.1	metallicDropTest	5
7.2	scheduleMetallicDropTest.....	6
7.3	mACLAYERTest	6
7.4	scheduleMACLayerTest.....	7
7.5	drawDialToneBreakTest.....	7
7.6	scheduleDrawDialToneBreakTest.....	7
7.7	Modifications to clause 9.15.1.5, "modifyResourceSelfTestSchedule"	8
7.8	Modifications to clause 9.15.1.6, "cancelScheduledResourceSelfTest"	8
7.9	Modifications to clause 9.15.1.7, "conductResourceSelfTest"	9
8	Enhancements to Event Supplier interface	9
8.1	ActivityCompletionEventSupplier	9
8.2	Table 1, "q834_4 module organization"	10
9	Enhancements to Common Interface for Capacity Management	10
10	Enhancements to Annex A, "Data dictionary"	10
11	Enhancements to Annex B, "Exceptions"	11

12	Enhancements to Annex C, "IDL files"	11
12.1	Enhancements to clause C.2, "Q834Build.idl"	11
12.2	Enhancements to clause C.3, "Q834Common.idl"	15
12.3	Enhancements to clause C.6, "Q834Eventpublisher.idl"	18
12.4	Enhancements to clause C.15, "Q834Test.idl"	19
13	Enhancements to Annex D, "Example endpoint templates"	22

ITU-T Recommendation Q.834.4

A CORBA interface specification for Broadband Passive Optical Networks based on UML interface requirements

Amendment 1

1 Scope

This amendment provides several enhancements to the CORBA interface specification for the management interface between a Supplier Management System and an Operator Management System managing Broadband Passive Optical Networks (BPOs). It includes changes needed for management of dynamic bandwidth allocation and automatic ranging of Optical Network Units (ONUs) and Optical Network Terminals (ONTs). It also includes additions required to adequately support testing of telephony and data services, software activity notification, and capacity management.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [1] ITU-T Recommendation G.983.4 (2001), *A broadband optical access system with increase service capability using dynamic bandwidth assignment (DBA)*.
- [2] ITU-T Recommendation G.983.7 (2001), *ONT Management and Control Interface specification for Dynamic Bandwidth Assignment (DBA) B-PON system*.
- [3] ITU-T Recommendation G.983.4 (2001)/Amd.1 (2003), *A broadband optical access system with increased service capability using dynamic bandwidth assignment (DBA), Amendment 1: New Annex A – Performance monitoring parameters*.
- [4] ITU-T Recommendation G.983.1 (1998), *Broadband optical access systems based on Passive Optical Networks (PON)*.

3 Terms and definitions

For the purposes of this amendment, the following definitions apply:

3.1 Terms imported from ITU-T Rec. G.983.4

The following terms from ITU-T Rec. G.983.4 [1] are used in this amendment.

- Dynamic Bandwidth assignment;
- T-CONT;
- Guaranteed Bandwidth;
- Fixed Bandwidth;
- Assured Bandwidth;
- Maximum Bandwidth.

3.2 New terms

This amendment defines no new terms.

4 Abbreviations

This amendment uses no new abbreviations in addition to those found in the main Recommendation.

5 Conventions

This amendment has no new conventions in addition to those found in the main Recommendation.

6 Enhancements to Build and Common interfaces

This clause describes changes to Q834::Build and Q834::Common interface required to support the management of dynamic bandwidth allocation as well as the automatic ranging of ONTs or ONUs following one of the ranging mechanisms defined in ITU-T Rec. G.983.1. First, operations used to construct or modify attributes for ONT or ONU network elements are modified to include input parameters required to properly characterize such network elements supporting dynamic bandwidth allocation and automatic ranging. Second, new operations are added to provide the capability of construction of TCONTs, a partitioning of bandwidth intended for use at an ONT or ONU in conjunction with the dynamic bandwidth allocation protocol mechanisms. These operations are called buildTCONT, modifyTCONTParameters, and deleteTCONT. The new operations create the need for a new exception called UnsupportedTCONTType, the enhancement of the definition of ParameterViolation exception, and the new use of an existing exception, InsufficientPONBW, by Q834::Build interface.

Third, the data structures used to characterize ONTs and ONUs in Q834::Common are modified to include these new attributes. Finally, new HistoryData record types are added to Q834::Common in order to allow for the performance monitoring of the dynamic bandwidth allocation function. They are called DBAFairnessPMHistoryDataType and TCONTTEPMHistoryDataType.

All changes to Q834::Common and associated changes to Annexes A and B are combined with other enhancements and presented in clauses 12.2, 10, and 11, respectively.

6.1 Modifications to clause 9.2.1.1, "buildNode"

a) *Replace:*

```
"          in AdministrationDomainType administrationDomain)
          raises (UnrecognisedVersion, InvalidSerialNumSyntax,
          DuplicateSerialNumber, UnknownProfiles,"
```

with:

```
"          in RegistrationIdType registrationId,
          in boolean sRInd,
          in AdministrationDomainType administrationDomain)
          raises (UnrecognisedVersion, InvalidSerialNumSyntax,
          DuplicateSerialNumber, UnknownProfiles, ParameterViolation,"
```

b) *Replace:*

"The input **administrationDomain** identifies the domain to which the NE belongs."

with:

"The input **registrationId** provides the logical key to associate this provisioning data with an installed NE. The input **sRInd** specifies whether or not the NE should be status reporting if the NE constructed is an ONT or ONU and dynamic bandwidth allocation is supported. The input **administrationDomain** identifies the domain to which the NE belongs."

6.2 Modifications to clause 9.2.1.2, "assignUserLabelsToNE"

a) *Replace:*

```
"                                in AdministrationDomainType administrationDomain)"
```

with:

```
"                                in RegistrationIdType registrationId,  
                                in AdministrationDomainType administrationDomain)"
```

b) *Replace:*

"The input **administrationDomain** identifies the domain to which the NE is assigned."

with:

"The input **registrationId** provides the logical key to associate this provisioning data with an installed NE. The input **administrationDomain** identifies the domain to which the NE belongs."

6.3 Modifications to clause 9.2.1.3, "modifyNode"

a) *Replace:*

```
"                                in AdministrationDomainType administrationDomain)  
                                raises (UnknownManagedEntity, UnknownNE,  
                                InvalidSlotAssignmentList, UnknownProfiles,  
                                DuplicateUserLabel, AccessDenied, InvalidExternalTime,  
                                ProfileSuspended);"
```

with:

```
"                                in RegistrationIdType registrationId,  
                                in boolean sRInd,  
                                in AdministrationDomainType administrationDomain)  
                                raises (UnknownManagedEntity, UnknownNE,  
                                InvalidSlotAssignmentList, UnknownProfiles,  
                                DuplicateUserLabel, AccessDenied, InvalidExternalTime,  
                                ProfileSuspended, ParameterViolation);"
```

b) *Replace:*

"The input **administrationDomain** identifies the domain to which the NE is reassigned."

with:

"The input **registrationId** provides the logical key to associate this provisioning data with an installed NE. The input **sRInd** specifies the new value for the status reporting characteristic of the ONT or ONU. The input **administrationDomain** identifies the domain to which the NE belongs."