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SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Digital transmission systems – Terminal equipments –
Operations, administration and maintenance features of
transmission equipment

ADPCM DCME configuration map report

ITU-T Recommendation G.776.3

(Formerly CCITT Recommendation)

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ITU-T RECOMMENDATION G.776.3

ADPCM DCME CONFIGURATION MAP REPORT

Summary

This Recommendation specifies the configuration report for Recommendations G.763 [7]/G.766 DCME [8] and the associated TMN parameters found in Recommendation G.776.1 [9]. The report presents the local DCME configuration map and highlights those parameters affecting system and traffic interoperability. Standardized configuration reports greatly assist field personnel in the end-to-end provisioning and trouble-shooting of DCME systems.

Source

ITU-T Recommendation G.776.3 was prepared by ITU-T Study Group 15 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 4 April 2000.

FOREWORD

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

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Recommendation G.776.3

ADPCM DCME CONFIGURATION MAP REPORT

(Geneva, 2000)

1 Scope

This Recommendation specifies the configuration report for ADPCM DCME (G.763 [7]/G.766 [8]) and the associated TMN parameters found in Recommendation G.776.1 [9].

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; all 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.

- [1] ITU-T Recommendation G.701 (1993), *Vocabulary of digital transmission and multiplexing, and pulse code modulation (PCM) terms.*
- [2] ITU-T Recommendation G.703 (1998), *Physical/electrical characteristics of hierarchical digital interfaces.*
- [3] ITU-T Recommendation G.704 (1998), *Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s hierarchical levels.*
- [4] CCITT Recommendation G.706 (1991), *Frame alignment and cyclic redundancy check (CRC) procedures relating to basic frame structures defined in Recommendation G.704.*
- [5] CCITT Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies.*
- [6] CCITT Recommendation G.726 (1990), *40, 32, 24, 16 kbit/s adaptive differential pulse code modulation (ADPCM).*
- [7] ITU-T Recommendation G.763 (1998), *Digital circuit multiplication equipment using G.726 ADPCM and digital speech interpolation.*
- [8] ITU-T Recommendation G.766 (1996), *Facsimile demodulation/remodulation for digital circuit multiplication equipment.*
- [9] ITU-T Recommendation G.776.1 (1998), *Managed objects for signal processing network elements.*
- [10] ITU-T Recommendation M.3100 (1995), *Generic network information model.*
- [11] ITU-T Recommendation Q.50 (1997), *Signalling between circuit multiplication equipments (CME) and international switching centres (ISC).*
- [12] CCITT Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information.*

3 Definitions

The definitions used in this Recommendation are used in the above-listed Recommendation as well.

4 Abbreviations

This Recommendation uses the following abbreviations:

ADPCM	Adaptive Differential Pulse Code Modulation
BC	Bearer Channel
BER	Bit Error Ratio
CAS	Channel Associated Signalling
CC	Control Channel
CRC	Cyclic Redundancy Check
dB	decibel
DCME	Digital Circuit Multiplication Equipment
DCN	Disconnect
DLC	Dynamic Load Control
E1	Digital signal level 1 at 2048 kbit/s
FCC	Facsimile Control Channel
FE	Far End
FEC	Forward Error Correction
ID	Identifier
IT	Intermediate Trunk
kbit/s	kilobits per second
Max	Maximum
Min	Minimum
ms	milliseconds
PCM	Pulse Code Modulation
PRI	Primary Rate Interface
Rx	Receive
STI	Statistics Time Interval
T1	Digital signal level 1 at 1544 kbit/s
TC	Trunk Channel
TCH	Transparent Circuit Handler
TS	Time Slot
Tx	Transmit
VBD	Voice-band Data

5 Recommendation overview

This Recommendation specifies the configuration report for Recommendations G.763 [7]/G.766 DCME [8] and the associated TMN parameters found in Recommendation G.776.1 [9]. The report presents the local DCME configuration map and highlights those parameters affecting system and traffic interoperability. Standardized configuration reports greatly assist field personnel in the

end-to-end provisioning and troubleshooting of DCME systems. These reports are used not only by local personnel, but exchanged between administrations at each end to validate the current configuration for interoperability.

The map data is italicized and bracketed (e.g. *<data>*). Parameters affecting system and traffic interoperability are shown in bold. Given their significance it is recommended that these parameters be presented in a similar manner in the actual implementation. To enhance useability of this Recommendation, these interoperability parameters are also listed in Annex A.

This Recommendation specifies the format of the configuration map printout of a G.763/G.766 DCME. The configuration map parameters in the report are divided into sections. Each section covers a specific subject. The parameters are arranged in tables. Appendix I contains an example of a configuration map report.

6 Total configuration

6.1 Map Identification

Map Identification

Create Information

Organization:	<i><mapOrganization></i>
Site Name:	<i><mapSiteName></i>
Map Name:	<i><mapName></i>
Creation Date:	<i><mapCreationTime></i>
S/W Version:	<i><softwareNumber></i>

Update Information

Number of Updates:	<i><mapNumberOfUpdates></i>
Last Updated by:	<i><mapLastUpdatedBy></i>
Update Date:	<i><mapUpdateDate></i>

Comments

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6.2 Modes (Network and DCME)

Modes (Network and DCME)

Network Operational Mode: *<operationalMode>*

Clique #	DCME Mode	Fax Modulation	FEC	Channel Check Procedure	ADPCM 2bit Ovrld	Disconnect Idle Calls
(1)	(2)	(3)	(4)	(5)	(6)	(7)

- (1) *<cliqueID>*
- (2) *<dcmeMode>*
- (3) *<facsimileDemodulation>*
- (4) *<faxFECActivation>*
- (5) *<channelCheckProcedure>*
- (6) *<adpcm2bitOverload>*
- (7) *<disconnectIdleCalls>*

6.3 Trunk Bit Streams

Trunk Bit Streams (2048 kbit/s)

Trunk Side Interface: *<priRate>*

Line Impedance: *<priLineImpedance>*

Trunk #	CRC-4	Modified CRC Alignment	E-bit Indicator
(1)	(2)	(3)	(4)

- (1) *<priID>*
- (2) *<priFrameFormat>*
- (3) *<priModifiedCRC4Alignment>*
- (4) *<priEBitActivation>*

Trunk Bit Streams (1544 kbit/s)

Trunk Side Interface: *<priRate>*

Trunk #	Line Equalizer	Frame Format	Line Code
(1)	(2)	(3)	(4)

- (1) *<priID>*
- (2) *<priLineImpedance>*
- (3) *<priFrameFormat>*
- (4) *<priLineCode>*

6.4 Bearer Bit Streams

Bearer Bit Streams (2048 kbit/s)

Bearer Side Interface: *<priRate>*

2048 kbit/s Impedance: *<priLineImpedance>*

2048 kbit/s Bearer Bit Streams:

Bearer #	CRC-4	Modified CRC Alignment	E-bit Indicator
(1)	(2)	(3)	(4)

(1) *<priID>*

(2) *<priFrameFormat>*

(3) *<priModifiedCRC4Alignment>*

(4) *<priEBitActivation>*

Bearer Bit Streams (1544 kbit/s)

Bearer Side Interface: *<priRate>*

Bearer #	Line Equalizer	Frame Format	Line Code
(1)	(2)	(3)	(4)

(1) *<priID>*

(2) *<priLineImpedance>*

(3) *<priFrameFormat>*

(4) *<priLineCode>*

6.5 Pools and Destinations

Pools and Destinations

Destinations

Dest. #	Rx Bearer	Destination Name	Abbreviated Name	Tx Pool	FE Dest. #
(1)	(2)	(3)	(4)	(5)	(6)

Tx Pool

Pool Size: *<poolsize>*

Bearer Channel Configuration Table

BC #	Assignment
(7)	(8)

Rx Pool #

Pool Size: <poolsize>

Bearer Channel Configuration Table

BC #	Assignment
(7)	(8)

NOTE – For Tx Pool # and Rx Pool #, only special BCs that are not related to TCs are displayed.

- (1) <destinationID>
- (2) <priID>
- (3) <destinationName>
- (4) <destinationName.Abbreviated>
- (5) <cliqueID>
- (6) <destinationNumberAtFarEnd>
- (7) <bcID>
- (8) <bcAssignment> (For each bearer channel: <bcID>)

6.6 Trunk Channel Mapping

Trunk Channel Mapping

TC	IT	Remote IT	Dest. #	Assignment	Tx BC	Rx BC
(1)	(2)	(3)	(4)	(5)	(6)	(7)

- (1) <tcID>
- (2) <itID>
- (3) <remoteITID>
- (4) <destinationID>
- (5) <tcAssignment>
- (6) <txBC>
- (7) <rxBC>

6.7 System Clocks

Dependent on the manufacturer used, select the report format in 6.7.1 or 6.7.2.

6.7.1 Clocking Method 1

System Clocks

Clock ID	Trunk In	Trunk Out	Bearer In
Main	(1)	(1)	(1)
Reserved	(1)	(1)	(1)

(1) <clockSource>

6.7.2 Clocking Method 2

System Clocks

Priority	Trunk In Clock	Bearer In Clock
1	(1)	(1)
2	(1)	(1)
3	(1)	(1)
4	(1)	(1)

(1) <clockSourceGroupID>

Tx Trunk Clocks

Priority In Clock Group	Trunk In Clock Group	Bearer In Clock Group	External Clock Group	Internal Clock
1	(1)	(1)	(1)	(1)
2	(1)	(1)	(1)	not applicable
3	(1)	(1)	not applicable	not applicable
4	(1)	(1)	not applicable	not applicable
5	(1)	not applicable	not applicable	not applicable
6	(1)	not applicable	not applicable	not applicable
7	(1)	not applicable	not applicable	not applicable
8	(1)	not applicable	not applicable	not applicable
9	(1)	not applicable	not applicable	not applicable
10	(1)	not applicable	not applicable	not applicable
11	(1)	not applicable	not applicable	not applicable
12	(1)	not applicable	not applicable	not applicable

(1) <clockSource>

Rx Bearer Clocks

Priority in Clock Group	Trunk In Clock Group	Bearer In Clock Group	External Clock Group	Internal Clock
1	(1)	(1)	(1)	(1)
2	(1)	(1)	(1)	not applicable
3	(1)	(1)	not applicable	not applicable
4	(1)	(1)	not applicable	not applicable
5	(1)	not applicable	not applicable	not applicable
6	(1)	not applicable	not applicable	not applicable
7	(1)	not applicable	not applicable	not applicable
8	(1)	not applicable	not applicable	not applicable
9	(1)	not applicable	not applicable	not applicable
10	(1)	not applicable	not applicable	not applicable
11	(1)	not applicable	not applicable	not applicable
12	(1)	not applicable	not applicable	not applicable

(1) <clockSource>

6.8 Signalling Interface

Signalling Interface

Trunk #	Idle Code (abcd)	Type	Q.50 Type
(1)	(2)	(3)	(4)

DLC Off (per TS): <q50aSimpDLConAbcd>

DLC On (per TS): <q50aSimpDLConAbcd>

(1) <priID>

(2) <signallingIdleCode>

(3) <casProtocol>

(4) <q50Type>

6.9 Fax Demodulation

Fax Demodulation

Clique #	Fax Demodulation	FEC
	(1)	(2)

NSS-code Fax machines not to be demodulated

Manufacturer Code	Machine Code
(3)	(4)

Fax Selective Deactivation TCs

(5)

- (1) *<facsimileDemodulation>*
- (2) *<faxFECActivation>*
- (3) *<nssNotSupportedManufacturerCode>*
- (4) *<nssNotSupportedMachineCode>*
- (5) *<facsimileDemodulationDS0>*

6.10 Alarm Handling

Alarm Handling

Alarm Extension Mode: *<alarmExtensionMode>*

Bearer backward alarm: *<bearerBackwardAlarm>*

Alarm Delay:

Trunk Set Delay: *<priAlarmDelay>*

Trunk Reset Delay: *<priAlarmResetDelay>*

Bearer Set Delay: *<priAlarmDelay>*

Bearer Reset Delay: *<priAlarmResetDelay>*

PCM (E1) Alarms

Alarms	Classification
Failure of I/C primary group	(1)
CRC MFR on primary group	(1)
LBER on primary group	(1)
Trunk BS AIS Failure	(1)
Bearer BS AIS Failure	(1)
Trunk BS RAI (TS 0)	(1)
Bearer BS RAI	(1)
Trunk BS MFR alarm (TS 16)	(1)
Trunk BS remote MFR alarm (TS 16)	(1)
Abnormal circuit supervision on TC	(1)
Trunk BS HSLIP – Tx	(1)
Trunk BS LSLIP – Tx	(1)
Trunk BS HSLIP – Rx	(1)
Trunk BS LSLIP – Rx	(1)
Bearer BS HSLIP – Rx	(1)
Bearer BS LSLIP – Rx	(1)

Alarm Handling**PCM (T1) Alarms**

Alarms	Classification
LOS – CFA on I/C primary group	(1)
LOF – CFA on I/C primary group	(1)
AIS – CFA on I/C primary group	(1)
YELLOW – CFA on I/C primary group	(1)
LOF or LOS – Defect on I/C primary group	(1)
AIS – Defect on I/C primary group	(1)
Abnormal circuit supervision on TC	(1)
HBER on bearer interface primary group	(1)
HBER on trunk interface primary group	(1)
LBER on primary group	(1)
BS HSLIP – Tx (Trunk)	(1)
BS LSLIP – Tx (Trunk)	(1)
BS HSLIP – Rx (Bearer)	(1)
BS LSLIP – Rx (Bearer)	(1)

DCME CC Alarms

Alarms	Classification
CC AIS failure	(1)
CC HBER	(1)
CC LBER	(1)
Loss of DCME Frame (LDFA)	(1)
Bearer backward alarm in DCME CC	(1)

CC Performance Alarms

Alarms	Classification
Bearer Average BER – per STI	(1)
Bearer BER excess – per STI	(1)
Bearer severely errored seconds – per STI	(1)

(1) *<alarmSeverityClassification>*

6.11 Activity Management

Activity Management

Data Activity Threshold: *<dataActivityThreshold>*

Max Injected Rx Noise: *<injectedRxNoiseMax>*

VBD Hangover

First data hangover value: *<dataHangoverFirst>*

Second data hangover value: *<dataHangoverSecond>*

6.12 DLC

DLC

DLC Mode: *<dlcMode>*

Voice/VBD Thresholds

Clique #	Average Bits per Sample		Data Bearer Occupancy	
	High Load	Low Load	High Load	Low Load
(2)	(3)	(4)	(5)	(6)

DLC timers

Clique #	First Stage Averaging Period	Voice/VBD DLC Deactivation Timer
(2)	(7)	(8)

64 kbit/s DLC

Clique #	64 kbit/s Circuit Limit DLC Activation	64 kbit/s DLC Deactivation Timer
(2)	(9)	(10)

Destination #	DLC/TCH Interaction
(11)	(12)

Destination Selective DLC

Destination #	Allocated Bearer Nibbles
(11)	(13)

- (2) <cliqueID>
- (3) <dlcVoiceHighLoadThreshold>
- (4) <dlcVoiceLowLoadThreshold>
- (5) <dlcDataHighLoadThreshold>
- (6) <dlcDataLowLoadThreshold>
- (7) <dlcFirstAveragingPeriod>
- (8) <dlcVoiceDeactivationTime>
- (9) <dlc64kbpsThreshold>
- (10) <dlc64kbpsDeactivationTimer>
- (11) <destinationID>
- (12) <dlcTCHInteraction>
- (13) <dlcAllocatedBearerNibbles>

6.13 Statistics

Statistics

Statistics Implementation: *<statisticsImplementation>*

Characteristic	Definition
Statistics Time Interval	(1)
Fax Statistics Time Interval	(2)

(1) *<statisticsTimeInterval>*

(2) *<facsimileStatisticsTimeInterval>*

ANNEX A

List of interoperability parameters

The parameters in 6.1 are not themselves required for interoperability. However, Administrations should use these parameters to ensure that the map in question is both correct and current.

The following parameters are critical to interoperability:

Network Operational Mode	<i><operationalMode></i>
DCME Mode	<i><dcmeMode></i>
Fax Modulation	<i><facsimileDemodulation></i>
FEC	<i><faxFECActivation></i>
ADPCM 2bit Ovrlld	<i><adpcm2bitOverload></i>
Disconnect Idle Calls	<i><disconnectIdleCalls></i>
Bearer Side Interface	<i><priRate></i>
Bearer CRC-4	<i><priFrameFormat></i>
Bearer Modified CRC Alignment	<i><priModifiedCRC4Alignment></i>
Bearer E-bit Indicator	<i><priEBitActivation></i>
Bearer Frame Format	<i><priFrameFormat></i>
Bearer Line Format	<i><priLineCode></i>
Pool Size	<i><poolsize></i>
Bearer Channel Assignment	<i><bcAssignment></i> (for each bearer channel: <i><bcID></i>)
IT	<i><itID></i>
Remote IT	<i><remoteITID></i>
Tx BC	<i><txBC></i>
Rx BC	<i><rxBC></i>
Signalling Interface Type	<i><casProtocol></i>
Fax Demodulation	<i><facsimileDemodulation></i>
FEC	<i><faxFECActivation></i>
Fax Selective Deactivation TCs	<i><facsimileDemodulationDS0></i>
Data Activity Threshold	<i><dataActivityThreshold></i>
Max Injected Rx Noise	<i><injectedRxNoiseMax></i>
First data hangover value	<i><dataHangoverFirst></i>
Second data hangover value	<i><dataHangoverSecond></i>

APPENDIX I

Example G.776.3 printout

Following is an example printout. The information contained in the fields is fictitious but attempts to show a realistic example.

Map Identification

Create Information

Organization: Xanadu Telcom
Site Name: Kublaville
Map Name: Cubicon Map2
Creation Date: 23-June-1999
S/W Version: 2.3

Update Information

Number of Updates: 2
Last Updated by: Jill A. Comtek
Update Date: 4-April-2000

Comments

This map is for the Kublaville, Xanadu to Cubicon Link 2 and was last updated to fix the configuration problems found when we exchanged Map updates (Thanks to G.776.3 printout!).

Modes (Network and DCME)

Network Operational Mode: Point-to-Point

Clique #	DCME Mode	Fax Modulation	FEC	Channel Check Procedure	ADPCM 2bit Ovrlid	Disconnect Idle Calls
(1)	G.763	Enable	Auto	Enable	Enable	Enable

Trunk Bit Streams

Trunk Side Interface: **2048 kbit/s**

Line Impedance: 75 ohms

Trunk #	CRC-4	Modified CRC Alignment	E-bit Indicator
1	Disable	Disable	Disable
2	Disable	Disable	Disable
3	Disable	Disable	Disable
4	Enable	Disable	Disable
5	Enable	Disable	Disable

Bearer Bit Streams (2048 kbit/s)

Bearer Side Interface: **2048 kbit/s**

2048 kbit/s Impedance: 75 ohms

2048 kbit/s Bearer Bit Streams:

Bearer #	CRC-4	Modified CRC Alignment	E-bit Indicator
1	Enabled	Disabled	Enabled

Pools and Destinations

Destinations

Dest. #	Rx Bearer	Destination Name	Abbreviated Name	Tx Pool	FE Dest. #
1	1	Cubicon	Cbcn	1	1

Tx Pool 1

Pool Size: 1-31

NOTE – Dynamic mappings are excluded.

BC #	Assignment
1	None

Rx Pool 1

Pool Size: 1-31

NOTE – Dynamic mappings are excluded.

BC #	Assignment
	None

Trunk Channel Mapping

TC	IT	Remote IT	Dest. #	Assignment	Tx BC	Rx BC
1/1 – 1/31	1-30	1-30	1	Dynamic	Dynamic	Dynamic
2/1 – 2/31	31-60	31-60	1	Dynamic	Dynamic	Dynamic
3/1 – 3/31	61-90	61-90	1	Dynamic	Dynamic	Dynamic
4/1 – 4/31	91-120	91-120	1	Dynamic	Dynamic	Dynamic
5/1 – 5/31	121-150	121-150	1	Dynamic	Dynamic	Dynamic

System Clocks

Clock ID	Trunk In	Trunk Out	Bearer In
Main	Trunk 1	Trunk 1	Bearer 1
Reserved	Trunk 2	Trunk 2	Internal

Signalling Interface

Trunk #	Idle Code (abcd)	Type	Q.50 Type
1	1101	Idle	A
2	1101	Idle	A
3	1101	Idle	A
4	1101	Idle	A
5	1101	Idle	A

Fax Demodulation

Clique #	Fax Demodulation	FEC
1	Enabled	Enabled

NSS-code Fax machines not to be demodulated

Manufacturer Code	Machine Code
Garage Shop Fax	Model T

Fax Selective Deactivation TCs

1, 16

Alarm Handling

Alarm Extension Mode: Per Time Slot

Bearer Backward Alarm: Enabled

Trunk Alarm Delay: 2 s

Bearer Alarm Delay: 2 s

Trunk Alarm Reset Delay: 10 s

Bearer Alarm Reset Delay: 10 s

PCM (E1) Alarms

Alarms	Classification
Failure of I/C primary group	PMA
CRC MFR on primary group	PMA
LBER on primary group	DMA
Trunk BS AIS Failure	SA
Bearer BS AIS Failure	SA
Trunk BS RAI (TS 0)	SA
Bearer BS RAI	SA
Trunk BS MFR alarm (TS 16)	SA
Trunk BS remote MFR alarm (TS 16)	PMA
Abnormal circuit supervision on TC	SA
Trunk BS HSLIP – Tx	MEI
Trunk BS LSLIP – Tx	MEI
Trunk BS HSLIP – Rx	MEI
Trunk BS LSLIP – Rx	MEI
Bearer BS HSLIP – Rx	PMA
Bearer BS LSLIP – Rx	MEI

Alarm Handling**DCME CC Alarms**

Alarms	Classification
CC AIS failure	SA
CC HBER	PMA
CC LBER	DMA
Loss of DCME Frame (LDFA)	PMA
Bearer backward alarm in DCME CC	SA

CC Performance Alarms

Alarms	Classification
Bearer Average BER – per STI	SA
Bearer BER excess – per STI	PMA
Bearer severely errored seconds – per STI	DMA

Activity Management**Data Activity Threshold [dBm]: -35****Max Injected Rx Noise: -50****VBD Hangover****First data hangover value [s]: 10****Second data hangover value [s]: 100**

DLC

DLC Mode: Global

Voice/VBD Thresholds

Clique #	Average Bits per Sample		Data Bearer Occupancy	
	High Load	Low Load	High Load	Low Load
1	3.6	3.0	90	70

DLC timers

Clique #	First Stage Averaging Period (ms)	Voice/VBD DLC Deactivation Timer (Ta) [s]
1	128	10

64 kbit/s DLC

Clique #	64 kbit/s Circuit Limit DLC Activation	64 kbit/s DLC Deactivation Timer (Tb) [s]
1	30	10

Destination #	DLC/TCH Interaction
1	Enable

Destination Selective DLC

Destination #	Allocated Bearer Nibbles
1	62

Statistics

Statistics

Statistics Implementation: Enabled

Characteristic	Definition
Statistics Time Interval [min]	10
Fax Statistics Time Interval [min]	10

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