

CEL-SP-PKT2.0-EDVA-I01-120319

Technical Specification

EuroPacketCable 2.0 Embedded Digital Voice Adapter (E-DVA) Specification



Cable
Europe
Labs

Keywords

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1 Scope

This Technical Specification defines requirements for a EuroPacketCable 2.0 E-DVA device. A EuroPacketCable 2.0 E-DVA is a EuroPacketCable Digital Voice Adapter (DVA) embedded in a EuroDOCSIS Cable Modem (CM). The specification takes into account specific requirements to the HFC access network and the telephony services platform deployed in Europe. Additionally, requirements are specified in order to allow operation of the EuroPacketCable 2.0 E-DVA both in PacketCable™ 2.0-compliant and other SIP-based core network architectures such as specified by 3GPP [TS24.229].

In the development of this specification every effort was taken to align the requirements for a EuroPacketCable 2.0 E-DVA with those for a PacketCable™ 2.0 E-DVA as specified by CableLabs® in its PacketCable™ 2.0 and PacketCable™ Residential SIP Telephony specifications. As such, this document is a delta specification referencing the requirements contained in the corresponding PacketCable™ 2.0 and PacketCable™ Residential SIP Telephony specifications while modifying or enhancing them where necessary.

2 Compliance Notation

Throughout this document, the words used to provide normative statements are capitalized as shown below:

MUST	This word or the adjective "REQUIRED" means that the item is an absolute requirement of this specification.
MUST NOT	This phrase means that the item is an absolute prohibition of this specification.
SHOULD	This word or the adjective "RECOMMENDED" means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighed before choosing a different course.
SHOULD NOT	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
MAY	This word or the adjective "OPTIONAL" means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

3 References

3.1 Normative References

In order to claim compliance with this specification, it is necessary to conform to the following specifications as indicated, in addition to the requirements of this specification. Notwithstanding, intellectual property rights may be required to use or implement such normative references.

3.1.1 PacketCable™ 2.0 Specifications

- [PKT-SP-ACCT] PacketCable™ Accounting Specification; PKT-SP-ACCT-I04-080425, www.cablelabs.com
- [PKT-SP-CODEC-MEDIA] PacketCable™ Codec and Media Specification; PKT-SP-CODEC-MEDIA-I09-100527, www.cablelabs.com
- [PKT-SP-EUE-DATA] PacketCable™ E-UE Provisioning Data Model Specification; PKT-SP-EUE-DATA-I07-110825, www.cablelabs.com
- [PKT-SP-EUE-PROV] PacketCable™ E-UE Provisioning Framework Specification; PKT-SP-EUE-PROV-I07-110825, www.cablelabs.com
- [PKT-SP-QOS] PacketCable™ Quality of Service Specification; PKT-SP-QOS-I02-080425, www.cablelabs.com
- [PKT-SP-23.008] PacketCable™ IMS Delta Specifications - Organization of Subscriber Data Specification 3GPP TS 23.008; PKT-SP-23.008-I03-080425, www.cablelabs.com
- [PKT-SP-24.229] PacketCable™ IMS Delta Specifications - Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 Specification 3GPP TS 24.229; PKT-SP-24.229-I07-110825, www.cablelabs.com
- [PKT-SP-29.228] PacketCable™ IMS Delta Specifications - IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling Flows and Message Contents Specification 3GPP 29.228; PKT-SP-29.228-I03-080425, www.cablelabs.com
- [PKT-SP-29.229] PacketCable™ IMS Delta Specifications Cx/Dx Interfaces Based on the Diameter Protocol Specification 3GPP TS 29.229; PKT-SP-29.229-I03-080425, www.cablelabs.com
- [PKT-SP-33.203] PacketCable™ IMS Delta Specifications - 3G Security; Access Security for IP-based Services Specification 3GPP TS 33.203; PKT-SP-33.203-I05-090528, www.cablelabs.com

3.1.2 PacketCable™ Residential SIP Telephony Specifications

- [PKT-SP-RST-EUE-PROV] PacketCable™ RST E-UE Provisioning Specification; PKT-SP-RST-EUE-PROV-I06-110127, www.cablelabs.com
- [PKT-SP-RST-ACCT] PacketCable™ Residential SIP Telephony Accounting Specification; PKT-SP-RST-ACCT-I05-100527, www.cablelabs.com
- [PKT-SP-RSTF] PacketCable™ Residential SIP Telephony Feature Specification; PKT-SP-RSTF-I08-110127, www.cablelabs.com
- [PKT-SP-RST-E-DVA] PacketCable™ Residential SIP Telephony E-DVA Specification; PKT-SP-RST-E-DVA-I09-110825, www.cablelabs.com

3.1.3 PacketCable™ MIB Definitions

- [PKT-SP-MIB-EXSIG1.5] PacketCable™ Signaling Extension MIB Specification; PKT-SP-MIB-EXSIG1.5-I04-090624, www.cablelabs.com

3.1.4 EuroPacketCable Requirements Documents

- [Euro-Certs] EuroPacketCable Certificate Requirements v9.0; www.excentis.com
- [Euro-Tones] EuroPacketCable L-Package Clarification v9.0; www.excentis.com

3.1.5 IETF Specifications

- [RFC4682] RFC 4682 - Multimedia Terminal Adapter (MTA) Management Information Base for PacketCable- and IP-Cablecom-Compliant Devices; December 2006, www.ietf.org
- [RFC5098] RFC 5098 - Signaling MIB for PacketCable and IP-Cablecom Multimedia Terminal Adapters (MTAs); February 2008, www.ietf.org
- [RFC5428] RFC 5428 - Management Event Management Information Base (MIB) for PacketCable- and IP-Cablecom-Compliant Devices; April 2009, www.ietf.org

3.1.6 ETSI Publications

- [TS101909-18] ETSI TS 101 909-18 V1.3.1 (2004-05) - IP Multimedia Time Critical Services; Part 18: Embedded Media Terminal Adapter (E-MTA) offering an interface to analogue terminals and Cable Modem; May 2004, www.etsi.org
- [ES201235-2] ETSI ES 201 235-2 V1.2.1 (2002-05) - Specification of Dual Tone Multi-Frequency (DTMF) Transmitters and Receivers; Part 2: Transmitters; May 2002, www.etsi.org
- [ES201235-3] ETSI ES 201 235-3 V1.3.1 (2006-03) - Specification of Dual Tone Multi-Frequency (DTMF) Transmitters and Receivers; Part 3: Receivers; March 2006, www.etsi.org

3.2 Informative References

The following referenced documents are not essential for the understanding of the content of this document but they assist the reader with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [PKT-SP-CPD] PacketCable™ Control Point Discovery Interface Specification; PKT-SP-CPD-I04-090528, www.cablelabs.com
- [PKT-SP-ES-DCI] PacketCable™ PacketCable Electronic Surveillance Delivery Function to Collection Function Interface Specification; PKT-SP-ES-DCI-I02-070925, www.cablelabs.com
- [PKT-SP-ES-INF] PacketCable™ Electronic Surveillance Intra-Network Specification; PKT-SP-ES-INF-I04-080425, www.cablelabs.com
- [PKT-SP-PRS] PacketCable™ Presence Specification; PKT-SP-PRS-I02-100527, www.cablelabs.com
- [PKT-SP-UE-DATA] PacketCable™ UE Provisioning Data Model Specification; PKT-SP-UE-DATA-I02-100527, www.cablelabs.com
- [PKT-SP-UE-PROV] PacketCable™ UE Provisioning Framework Specification; PKT-SP-UE-PROV-I02-100527, www.cablelabs.com

- [PKT-SP-RST-UE-PROV] PacketCable™ RST UE Provisioning Specification; PKT-SP-RST-UE-PROV-I02-100527, www.cablelabs.com
- [PKT-SP-EVEMIB1.5] PacketCable™ Management Event MIB Specification; PKT-SP-EVEMIB1.5-I02-050812, www.cablelabs.com
- [TS24.229] 3GPP TS 24.229 - IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3; www.3gpp.org

3.3 Reference acquisition

- European Telecommunications Standards Institute (ETSI); <http://www.etsi.org>
- Cable Television Laboratories, Inc.; <http://www.cablelabs.com>
- Excentis; <http://www.excentis.com>
- Internet Engineering Task Force; <http://www.ietf.org>
- European Telecommunications Standards Institute; <http://www.etsi.org>
- 3rd Generation Partnership Project; <http://www.3gpp.org>

4 Definitions, symbols and abbreviations

4.1 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3GPP	Third Generation Partnership Project
AC	Alternate Current
DTMF	Dual-Tone Multi-Frequency signaling
DOCSIS	Data-Over-Cable Service Interface Specification
E-DVA	Embedded DVA
E-UE	Embedded UE
DVA	Digital Voice Adapter
IMPI	IP Multimedia Private Identity
IP	Internet Protocol
MIB	Management Information Base
MTA	Multimedia Terminal Adapter
NCS	Network-based Call Signaling
NENA	National Emergency Number Association (9-1-1 Association)
RST	Residential SIP Telephony
SIP	Session Initiation Protocol
UE	User Equipment
XML	eXtensible Markup Language

5 EuroPacketCable 2.0 E-DVA Requirements

The EuroPacketCable 2.0 E-DVA relies on specifications for the PacketCable 2.0 E-DVA. The set of relevant specifications is comprised of a base set of PacketCable 2.0 specifications and a set of PacketCable Residential SIP Telephony specifications.

A EuroPacketCable 2.0 E-DVA **MUST** comply with all requirements pertaining to a PacketCable 2.0 E-DVA as specified in the PacketCable 2.0 and Residential SIP Telephony specifications unless stated otherwise in this document. In case of any conflicting requirements, it is this document that takes precedence.

5.1 General Requirements

5.1.1 Power Requirements

In European households AC power is 220/230V. A EuroPacketCable 2.0 E-DVA **MUST** provide means to be powered by a mains network available in the residential environment in Europe. Battery backup is **OPTIONAL**.

5.1.2 DOCSIS Cable Modem Requirements

The DOCSIS Cable Modem embedded in a EuroPacketCable 2.0 E-DVA **MUST** implement the European technology option defined in the DOCSIS specifications (a.k.a. EuroDOCSIS).

5.1.3 Certificate Requirements

Several documents that are part of the PacketCable 2.0 and PacketCable Residential SIP Telephony specification set refer to the PacketCable certificates that were defined by PacketCable 1.0 and later re-used in PacketCable 1.5 and also in PacketCable 2.0.

Existing EuroPacketCable 1.0 and 1.5 certificates are being re-used for EuroPacketCable 2.0. E-DVA certificates **MUST** follow the MTA Device certificate profile as specified in [Euro-Certs].

5.2 Delta Requirements for PacketCable 2.0 and PacketCable RST Specifications

5.2.1 PKT-SP-CODEC-MEDIA

A EuroPacketCable 2.0 E-DVA **MUST** comply with requirements as specified in [PKT-SP-CODEC-MEDIA] with the following exceptions.

Requirements pertaining to DTMF as specified in Section 7.4.2.4 of [PKT-SP-CODEC-MEDIA] (DTMF Relay) are not applicable. Instead, DTMF transmission and reception **MUST** be implemented in compliance with [ES201235-2] and [ES201235-3].

5.2.2 PKT-SP-EUE-DATA

A EuroPacketCable 2.0 E-DVA **MUST** comply with requirements as specified in [PKT-SP-EUE-DATA] with the exception of MIB module and XML schema definitions. Requirements for MIB modules and XML schemas of a EuroPacketCable 2.0 E-DVA are specified in Section 5.3.

5.2.3 PKT-SP-RST-EUE-PROV

A EuroPacketCable 2.0 E-DVA MUST comply with requirements as specified in [PKT-SP-RST-EUE-PROV] with the exception of MIB module definitions. Requirements for MIB modules of a EuroPacketCable 2.0 E-DVA are specified in Section 5.3.

5.2.4 PKT-SP-RST-E-DVA

A EuroPacketCable 2.0 E-DVA MUST comply with requirements as specified in [PKT-SP-RST-E-DVA] with the following exceptions.

Requirements pertaining to an analogue line interface as specified in Section 7 of [PKT-SP-RST-E-DVA] are not applicable. Instead, a EuroPacketCable 2.0 E-DVA MUST comply with the requirements for a POTS interface as defined in Section 6 of [TS101909-18]. All requirements for EuroPacketCable 1.0 and EuroPacketCable 1.5 E-MTAs are to be applied to EuroPacketCable 2.0 E-DVAs correspondingly. Requirements specific to the NCS protocol are not applicable.

Requirements pertaining to tones as specified in [PKT-SP-RST-E-DVA] are not applicable. Instead, a EuroPacketCable 2.0 E-DVA MUST comply with the definition of analogue tones as specified in [Euro-Tones]. Requirements specific to the NCS protocol are not applicable. MIB objects referred to in [Euro-Tones] are to be replaced by the corresponding MIB objects as specified in Section 5.3.

5.2.5 PKT-SP-RSTF

The general principles and E-UE requirements as specified in [PKT-SP-RSTF] are applicable for a EuroPacketCable 2.0 E-DVA.

Details of European implementations of call features and emergency services particularly when references to Telcordia specifications or NENA requirements have to be replaced are left for further study.

5.2.6 Specification Without Delta Requirements

A EuroPacketCable 2.0 E-DVA MUST comply with requirements as specified in the following specifications:

- [PKT-SP-23.008]
- [PKT-SP-24.229]
- [PKT-SP-29.228]
- [PKT-SP-29.229]
- [PKT-SP-33.203]
- [PKT-SP-EUE-PROV]
- [PKT-SP-ACCT]
- [PKT-SP-QOS]
- [PKT-SP-RST-ACCT]

5.3 EuroPacketCable 2.0 E-DVA MIB Requirements

5.3.1 E-UE RST MIB

The MIB module `CL-PKTC-EUE-RST-MIB` contains MIB objects for the configuration of RST features specified in the PacketCable RST specifications.

A EuroPacketCable 2.0 E-DVA MUST implement all MIB objects as specified in Annex A of [PKT-SP-RST-EUE-PROV] that are defined as mandatory objects by the `pktcEUEERSTEuroCompliance`

compliance statement. The `pktcEUERSTEuroCompliance` compliance statement includes mandatory support for the `pktcInternationalGroup` from [RFC5098].

In addition, a EuroPacketCable 2.0 E-DVA MUST implement MIB objects that are listed below and are defined in [RFC5098] if it supports the Pulse Dialing feature as specified in [TS101909-18].

```

pktcSigPulseSignalFrequency
pktcSigPulseSignalDbLevel
pktcSigPulseSignalDuration
pktcSigPulseSignalPulseInterval
pktcSigPulseSignalRepeatCount
pktcSigEndPntConfigPulseDialInterdigitTime
pktcSigEndPntConfigPulseDialMinMakeTime
pktcSigEndPntConfigPulseDialMaxMakeTime
pktcSigEndPntConfigPulseDialMinBreakTime
pktcSigEndPntConfigPulseDialMaxBreakTime

```

5.3.2 E-DVA MIB

The MIB module `CL-PKTC-EUE-EDVA-MIB` contains MIB objects for the configuration of the PacketCable 2.0 E-DVA.

A EuroPacketCable 2.0 E-DVA MUST implement all MIB objects as specified in Annex B of [PKT-SP-RST-EUE-PROV] with the following exceptions.

Support for the E-DVA Network Disconnect Signaling Event as specified in Section 6.14 in [TS101909-18] is optional for a EuroPacketCable 2.0 E-DVA. Therefore, the default value (DEFVAL) of the MIB object `pktcEDVANetDisc` as specified in Annex B of [PKT-SP-RST-EUE-PROV] MUST be 'zero'.

Provisioned loss parameters for the EuroPacketCable 2.0 E-DVA are specified in [TS101909-18]. The default value (DEFVAL) of the MIB object `pktcEDVAPrLossDA` as specified in Annex B of [PKT-SP-RST-EUE-PROV] MUST be 11. The default value (DEFVAL) of the MIB object `pktcEDVAPrLossAD` as specified in Annex B of [PKT-SP-RST-EUE-PROV] MUST be 4.

Support for V.152 (voice band data) as specified in [PKT-SP-RST-E-DVA] is optional for a EuroPacketCable 2.0 E-DVA. Therefore, the default value (DEFVAL) of the MIB object `pktcEDVACodecV152` as specified in Annex B of [PKT-SP-RST-EUE-PROV] MUST be 'false'.

Support for MIB objects in the `pktcEnNcsLVMgmtGroup` and `pktcEnNcsGroup` as specified in [PKT-SP-MIB-EXSIG1.5] is also mandatory for a EuroPacketCable 2.0 E-DVA. In [PKT-SP-MIB-EXSIG1.5], `pktcNcsEndPntConfigTable` as specified in [PKT-SP-MIB-SIG1.5] is enhanced. A EuroPacketCable 2.0 E-DVA MUST use the MIB objects listed for that purpose in `CL-PKTC-EUE-EDVA-MIB` to enhance `pktcSigEndPntConfigTable` as specified in [RFC5098] instead.

As a result, it should be noted that a EuroPacketCable 2.0 E-DVA will have the MIB objects as specified in [RFC5098] rooted under the `mib-2` OID while the MIB objects as specified in [PKT-SP-MIB-EXSIG1.5] are rooted under the private OID of Cable Television Laboratories, Inc.

5.3.3 E-UE TC MIB

The MIB module `CL-PKTC-EUE-TC-MIB` specifies textual conventions that are used for the definition of PacketCable E-UE MIB objects.

A EuroPacketCable 2.0 E-DVA MUST implement all textual conventions as specified in Annex A.1 of [PKT-SP-EUE-DATA].

5.3.4 E-UE DEF MIB

The MIB module `CL-PKTC-EUE-DEV-MIB` contains MIB objects for the configuration of the PacketCable 2.0 Embedded User Equipment (E-UE) as specified in [PKT-SP-EUE-PROV].

A EuroPacketCable 2.0 E-DVA MUST implement all MIB objects as specified in Annex B.1 of [PKT-SP-EUE-DATA].

5.3.5 E-UE USER MIB

The MIB module `CL-PKTC-EUE-USER-MIB` contains MIB objects for the configuration of the PacketCable 2.0 User as specified in [PKT-SP-EUE-PROV].

A EuroPacketCable 2.0 E-DVA MUST implement all MIB objects as specified in Annex B.2 of [PKT-SP-EUE-DATA].

5.3.6 E-UE PROV MGMT MIB

The MIB module `CL-PKTC-EUE-PROV-MGMT-MIB` contains MIB objects for provisioning and management of the PacketCable 2.0 E-UE as specified in [PKT-SP-EUE-PROV].

A EuroPacketCable 2.0 E-DVA MUST implement all MIB objects as specified in Annex C.1 of [PKT-SP-EUE-DATA] including mandatory MIB objects included from [RFC4682].

5.3.7 E-UE EVENT MIB

The MIB module `CL-PKTC-EUE-EVENT-MIB` contains MIB objects for the configuration of the Management Event mechanism as specified in [PKT-SP-EUE-PROV].

A EuroPacketCable 2.0 E-DVA MUST implement all MIB objects as specified in Annex C.2 of [PKT-SP-EUE-DATA] that are defined as mandatory objects by the `pktcEUEEventEuroCompliance` compliance statement. The `pktcEUEEventEuroCompliance` compliance statement includes mandatory support for the MIB objects specified in [RFC5428].

5.3.8 Certificate Bootstrapping XML Schema

The PacketCable E-UE Provisioning Certificate Bootstrapping XML Schema is specified for use with the PacketCable E-UE Certificate Bootstrapping procedure. It defines IM Private Identifiers (IMPIs) and associated credentials.

A EuroPacketCable 2.0 E-DVA MUST implement the XML schema as specified in Annex D.1 of [PKT-SP-EUE-DATA] if the E-UE Provisioning Certificate Bootstrapping mechanism as specified in [PKT-SP-EUE-PROV] is supported.

5.3.9 E-UE PRS MIB

The MIB module `CL-PKTC-EUE-PRS-MIB` contains MIB objects for the configuration of the Presence Service feature as specified in [PKT-SP-PRS] which is out-of-scope for this specification.

This MIB module as specified in Annex D.2 of [PKT-SP-EUE-DATA] is not applicable.

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