COMMON-ISDN-API

Version 2.0

Part IV

Interoperability

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Contents (Part IV)

9 INTEROPERABILITY

9.1 Message Description

9.1.1 INTEROPERABILITY_REQ

Description

This message is used to handle interoperability with other specifications. These messages are *not* available to CAPI applications. At present, interoperability with USB devices is defined.

INTEROPERABILITY_REQ	Command	**0x20**
	Subcommand	**0x80**

Parameter	Type	Comment
Interoperability selector	word	**0x0000:** USB Device Management **0x0001**: Bluetooth Device Management
Interoperability request parameter	struct	Interoperability-dependent parameters

9.1.2 INTEROPERABILITY_CONF

Description

This message confirms the acceptance of the **INTEROPERABILITY_REQ**. Any error is coded in the parameter *Info*.

INTEROPERABILITY_CONF	Command	**0x20**
	Subcommand	**0x81**

Parameter	**Type**	**Comment**
Info	word	**0:** Request accepted **0x2001:** Message not supported in current state **0x2007:** Illegal message parameter coding **0x300F:** Unsupported interoperability
Interoperability selector	word	**0x0000:** USB Device Management **0x0001**: Bluetooth Device Management
Interoperability confirmation parameter	struct	Interoperability-dependent parameters

9.1.3 INTEROPERABILITY_IND

Description

This message is used to indicate a interoperability-dependent event.

INTEROPERABILITY_IND	Command	**0x20**
	Subcommand	**0x82**

Parameter	Type	Comment
Interoperability selector	word	**0x0000:** USB Device Management
Interoperability indication parameter	struct	Interoperability-dependent parameters

9.1.4 INTEROPERABILITY_RESP

Description

With this message, the application acknowledges receipt of an interoperability indication message.

INTEROPERABILITY_RESP	Command	**0x20**
	Subcommand	**0x83**

Parameter	**Type**	**Comment**
Interoperability selector	word	**0x0000:** USB Device Management
Interoperability response parameter	struct	Interoperability-dependent parameters

9.2 Parameter Description

This section describes the parameters used in **COMMON-ISDN-API** messages which are specific to interoperability. Each parameter is listed with its data type, possible values and reference to the messages in which the parameter appears.

9.2.1 Interoperability Selector

Interoperability Selector (word)

The purpose of the parameter *interoperability selector* is to identify the requested **COMMON-ISDN-API** interoperation capability.

The defined values are:

0	**USB Device Management**
1	**Bluetooth Device Management**

This information element appears in:

INTEROPERABILITY_REQ
INTEROPERABILITY_CONF
INTEROPERABILITY_IND
INTEROPERABILITY_RESP

9.2.2 USB Device Management

This section describes the parameters used for USB device management. The parameters are coded as structures depending on the value of *interoperability selector*, which is **0** for **USB Device Management**.

Interoperability Request Parameter (struct)

The purpose of the parameter *Interoperability Request Parameter* is to offer additional information concerning the message INTEROPERABILITY_REQ.

Function	word	0: Register 1. Release 2: Open Interface 3: Close Interface 4: Write
	struct	USB-specific parameters

A USB CAPI model compliant device must be implemented according to the "Universal Serial Bus Class Definitions for Communications Devices", Chapter 3.7.2 (January 1999) as published by the USB-IF (http://www.usb.org).
An intelligent COMMON-ISDN-API device is capable of handling all COMMON-ISDN-API messages. Additionally, the operations REGISTER and RELEASE must be transfered to the device. In case of the messages DATA_B3_REQ and DATA_B3_IND the parameter Data is ignored and the Data is following directly the message.
A simple COMMON-ISDN-API device provides Layer 1 services to the COMMON-ISDN-API implementation which resides in the host. In this case, USB device management functions 2..5 (Open/Close/Write/Read Interface) are used in addition to functions 0 and 1. All other COMMON-ISDN-API messages are ignored by simple COMMON-ISDN-API devices.

USB-specific parameters:

0 Register:

maxLogicalConnections	word	Maximum number of logical connections
maxBDataBlocks	word	Number of data blocks available simultaneously
maxBDataLen	word	Maximum size of a data block

1 Release:

Parameter does not apply (coded as structure with a length of 0)

2 Open Interface (simple device only):

B1 protocol	word	
B1 configuration	struct	
B Channel Information	struct	Note: channel must be set to 3 ("channel allocation")

3 Close Interface (simple device only):

USB interface ID	dword	Line Identifier

4 Write (simple device only):

USB Interface ID	dword	Line Identifier
Data	struct	Data to be transmitted

Note: Simple COMMON-ISDN-API devices do not have to support a window size mechanism: the COMMON-ISDN-API host implementation must wait for the local confirmation before sending the next data. This does not affect the window size mechanism described in COMMON-ISDN-API Part I, Chapter 5, message DATA_B3_CONF.

This information element appears in:

INTEROPERABILITY_REQ

Interoperability Confirmation Parameter (struct)

The purpose of the parameter *Interoperability Confirmation Parameter* is to provide additional information concerning the message INTEROPERABILITY_CONF.

Function	word	0: Register 1. Release 2: Open interface 3: Close interface 4: Write
	struct	USB-specific parameters

USB-specific parameters:

0 Register:

Info	word	0x0000: no error All other values: codes as described in paramter *Info*, Class 0x10xx
USB device mode	word	0: Intelligent COMMON-ISDN-API device 1: Simple COMMON-ISDN-API device

1 Release:

Info	word	0x0000: no error All other values: codes as described in paramter *Info*, Class 0x10xx

2 Open Interface (simple device only):

Info	word	0x0000: no error 0x3001: B1 protocol not supported 0x3004: B1 protocol parameter not supported 0x300B: Facility not supported (no simple device) 0x300E: Overlapping channel masks
USB interface ID	dword	Line Identifier

3 Close Interface (simple device only):

Info	word	0x0000: no error 0x300B: Facility not supported (no simple device)

4 Write (simple device only):

Info	word	0x0000: no error 0x300B: Facility not supported (no simple device)

This information element appears in:

INTEROPERABILITY_CONF

Interoperability Indication Parameter (struct)

The purpose of the parameter *Interoperability Indication Parameter* is to provide additional information concerning the message INTEROPERABILITY_IND.

Function	word	5: Read
	struct	USB-specific parameters

USB-specific parameters:

5 Read (simple device only):

USB interface ID	dword	Line Identifier
Data	struct	Received data

This information element appears in:

INTEROPERABILITY_IND

Interoperability Response Parameter (struct)

The purpose of the parameter *Interoparability Response Parameter* is to provide additional information concerning the message INTEROPERABILITY_RESP.

Parameter does not apply (coded as structure with a length of 0)

This information element appears in:

INTEROPERABILITY_RESP

9.2.3 Bluetooth Device Management

This section describes the parameters used for Bluetooth device management. The parameters are coded as structures depending on the value of *interoperability selector*, which is **1** for **Bluetooth Device Management**. The Bluetooth specific protocol mechanism to exchange **COMMON-ISDN-API** messages are specified in the Bluetooth **"Common ISDN profile"**, which is expected to be published in 2002.

The **COMMON-ISDN-API** compliant Bluetooth network access must support at least the B channel protocol combinations (B1/B2/B3) 0/1/0 and 1/1/0, i.e. the services speech and HDLC.

In case of the messages DATA_B3_REQ and DATA_B3_IND the parameter Data is ignored and the data is following directly the message.

Implementations must take into account, that the Bluetooth connection can be lost, caused e.g. by transmission problems or by non-recoverable errors in the Bluetooth network access.

Interoperability Request Parameter (struct)

The purpose of the parameter *Interoperability Request Parameter* is to offer additional information concerning the message INTEROPERABILITY_REQ.

Function	word	0: Register 1: Release 2: Get_Profile 3: Get_Manufacturer 4: Get_Version 5: Get_Serial_Number 6: Manufacturer
	struct	Bluetooth-specific parameters

A **COMMON-ISDN-API** compliant Bluetooth network access has to be implemented according to the Bluetooth "Common ISDN profile". A network access according to this profile is capable of handling all **COMMON-ISDN-API** messages.
Additionally, the **COMMON-ISDN-API** *operations* must be transfered to the device. To be able to identify the confirmation for these 'operation messages' the **COMMON-ISDN-API** implementations on both sides shall use the unique message-number mechanism.

Bluetooth-specific parameters:

0 Register:

maxLogicalConnections	word	Maximum number of logical connections
maxBDataBlocks	word	Number of data blocks available simultaneously
maxBDataLen	word	Maximum size of a data block

Parameter *ApplID* in **the COMMON-ISDN-API** message header shall be ignored.

1 Release:
Parameter does not apply (coded as structure with a length of 0)
Note: Parameter *ApplID* in the message header is used to identify the application.

2 Get_Profile:

Controller	dword	Controller. If 0 only the number of controllers installed is provided to the application

Parameter *ApplID* in **the COMMON-ISDN-API** message header shall be ignored.

3 Get_Manufacturer

Controller	dword	Controller

Parameter *ApplID* in **the COMMON-ISDN-API** message header shall be ignored.

4 Get_Version

Controller	dword	Controller

Parameter *ApplID* in **the COMMON-ISDN-API** message header shall be ignored.

5 Get_Serial_Number

Controller	dword	Controller

Parameter *ApplID* in **the COMMON-ISDN-API** message header shall be ignored.

6 Manufacturer

The usage of Manufatcurer is manufacturer-dependent.

This information element appears in:

INTEROPERABILITY_REQ

Interoperability Confirmation Parameter (struct)

The purpose of the parameter *Interoperability Confirmation Parameter* is to provide additional information concerning the message INTEROPERABILITY_CONF.

Function	word	0: Register 1: Release 2: Get_Profile 3: Get_Manufacturer 4: Get_Version 5: Get_Serial_Number 6: Manufacturer
	struct	Bluetooth-specific parameters

Bluetooth-specific parameters:

0 Register:

Info	word	0x0000: no error All other values: codes as described in parameter *Info*, Class 0x10xx

The parameter *ApplID* in the message header has been assigned und shall be used for all further messages.

1 Release:

Info	word	0x0000: no error All other values: codes as described in parameter *Info*, Class 0x11xx

2 Get_Profile:

Info	word	0x0000: no error <> 0 Coded as described in parameter *Info*, class 0x11xx
SzBuffer	struct	64 Byte information about the implemented features, the total number of controllers and the protocols supported by the specific controller (see 4.2.2.7)

3 Get_Manufacturer:

Info	word	0x0000: no error 0x300B: Facility not supported
Controller	dword	Number of Controller
SzBuffer	struct	64 Byte identification string, coded as a zero-terminated ASCII string

4 Get_Version:

ReturnValue	dword	0x0000: No error, version numbers have been copied
Controller	dword	Number of Controller
CAPIMajor	dword	**COMMON-ISDN-API** major version number: 2
CAPIMinor	dword	**COMMON-ISDN-API** major version number: 0
ManufactureMajor	dword	manufacturer-specific major number
ManufactureMajor	dword	manufacturer-specific minor number

5 Get_Serial_Number:

ReturnValue	dword	0x0000: No error, serial number has been copied
Controller	dword	Number of Controller
SzBuffer	struct	8 Byte Buffer – contains the serial number in plain text in the form of 7-digit number. If no serial number is provided by the manufacturer, an empty string is returned

6 Manufacturer:

The usage of Manufatcurer is manufacturer-dependent.

This information element appears in:

INTEROPERABILITY_CONF