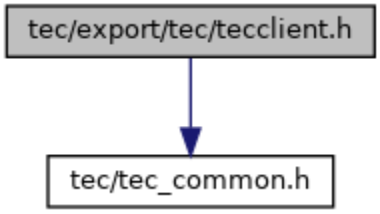
verifone

tecclient.h File Reference

```
#include "tec/tec_common.h"
```

Include dependency graph for tecclient.h:



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Data Structures	
struct	cts_ServerConfig

Macros	
#define	CTS_FORMAT -101
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#define	CTS_UNKNOWN_INS -105
#define	CTS_BLOCKED -106
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#define	CTS_IPC -202

Typedefs	
typedef void(*	cts_Callback) (unsigned char server_idx, void *data)

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int	cts_SetOptions (unsigned char server_idx, const unsigned char *options, unsigned char options_len)
int	cts_StartSelection (unsigned char server_idx, unsigned char supportedTechnologies, unsigned short timeout_sec, cts_Callback cbf, void *cb_data, unsigned char *options, unsigned char options_len)
int	cts_StopSelection (unsigned char server_idx)
int	cts_WaitSelection (unsigned char server_idx, unsigned char *usedTechnology, unsigned char *dataBuffer, unsigned short *dataBufferLength, unsigned short timeout_msec)
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int	cts_WaitCardRemoval (unsigned char server_idx, cts_Callback cbf, void *cb_data)
int	cts_WaitCardRemoval2 (unsigned char server_idx, unsigned short timeout_sec)
int	cts_Ping (unsigned char server_idx, unsigned short byteCount)

Detailed Description

Interface definitions for libtecclient. This file defines the API for the technology selection client library.

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Data Structure Documentation

◆ cts_ServerConfig

struct cts_ServerConfig

Server configuration.

Data Fields

const char *	hostname	host name of server, NULL or empty string means localhost
unsigned short	port	port to connect to, 0 means default port (5825)

Typedef Documentation

◆ cts_Callback

```
typedef void(* cts_Callback) (unsigned char server_idx, void *data)
```

Type of function that is called after technology selection has been finished (see cts_StartSelection()) or removed (see cts_WaitCardRemoval()).

Parameters

[in]	server_idx	: index of server on which technology selection has been finished.
[in]	data	: Data pointer provided by the application.

Function Documentation

◆ cts_ConfigureServer()

int cts_ConfigureServer	(	unsigned char	*server_cnt*,
		const cts_ServerConfig *	*server_cfg*
	)		

Configure servers. Set servers and connect to them.

Parameters

[in]	server_cnt	number of servers. Set to 0 to disconnect from all servers.
[in]	server_cfg	list of server configurations

Returns

- CTS_OK : Successfully connected to all servers
- CTS_IPC : Could not connect to one or more servers
- CTS_ERROR : Internal error

◆ cts_Ping()

int cts_Ping	(	unsigned char	*server_idx*,
		unsigned short	*byteCount*
	)		

Function to test round trip performance

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).
[in]	byteCount	: number of bytes send for ping-pong, for instance up to 2048 byte supported

Returns

- CTS_OK : ping ping successful
- CTS_PARAM : parameter byte count too high
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC

◆ cts_RemoveTechnologies()

int cts_RemoveTechnologies	(	unsigned char	*server_idx*,
		unsigned char	*technologies*
	)		

This function removes technologies from currently running technology selection. This can be useful to remove contact and magstripe technologies after the application was informed by EMV-ADK that a ctls retap scenario is running.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).

[in]	technologies	: technologies to remove from running technology selection: combination of TEC technology code, any additional bits are reserved for future use and are currently ignored. Supplying none of TEC technology code is allowed. In this case this function does actually nothing.

Returns

- CTS_OK : Removing technologies is successfully requested.
- CTS_NOT_STARTED : Technology selection is not running.
- CTS_API_NOT_ALLOWED : API not allowed because TEC-callback is still in progress.
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC

◆ cts_SetOptions()

int cts_SetOptions	(	unsigned char	*server_idx*,
		const unsigned char *	*options*,
		unsigned char	*options_len*
	)		

Set additional options on specified server. This function must not be called while technology selection is running.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).
[in]	options	: data pointer, TLV format, see TEC option tags
[in]	options_len	: length of options

Returns

- CTS_OK : No error
- CTS_API_NOT_ALLOWED : API not allowed because TEC-callback is still in progress.
- CTS_PARAM : options == NULL or options_len == 0 or TLV error
- CTS_ERROR : technology selection is currently running.

◆ cts_StartSelection()

int cts_StartSelection	(	unsigned char	*server_idx*,
		unsigned char	*supportedTechnologies*,
		unsigned short	*timeout_sec*,
		cts_Callback	*cbf*,
		void *	*cb_data*,
		unsigned char *	*options*,
		unsigned char	*options_len*
	)		

This function starts an asynchronous card reader monitoring on specified server. The monitoring ends if

- magstripe card is swiped or inserted
- or chip card is inserted
- or contactless card is tapped
- or the timeout occurs
- or cts_StopSelection() is called
- or error occurred.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).
[in]	supportedTechnologies	: supported technologies: combination of TEC technology code, any additional bits are reserved for future use and are currently ignored. Supplying none of TEC technology code is allowed. In this case cts_WaitSelection() will never return CTS_OK or CTS_NO_CHIP of course.
[in]	timeout_sec	: main timeout in seconds to wait for card insertion/swipe/tap, min=0 (makes no sense), max=65535s, infinite timeout not possible; if this timeout expires while a timeout defined in options[6..7] or options[8..9] is running, latter timeouts have higher priority, they are not aborted.

[in]	cbf	: callback function that is called when technology selection has been finished, that means a (positive or negative) result != CTS_IN_PROGRESS can be obtained with cts_WaitSelection(), may be NULL. The following APIs are not allowed to be called while the callback function is still in progress: • cts_SetTraceCallback() • cts_SetOptions() • cts_StartSelection() • cts_RemoveTechnologies() • cts_WaitCardRemoval() • cts_WaitCardRemoval2() • cts_StopSelection()
[in]	cb_data	: data pointer that is passed on to the callback function, may be NULL.

[in]	options	: data pointer: **options[0..1]**: see TEC start options **options[2..3]**: reserved. **options[4]** is passed to CT ICC functions. **options[5]** is passed to CTLS ICC functions. **options[6..7]**: is a 2-byte binary parameter in big-endian format. min = 0x0000, max = 0xFFFF = 65535ms. options[6..7] is the time in milliseconds to wait for MSR-Data after CTLS has been detected. If options[6..7] == 0x0000, means do not wait for MSR after CTLS detection. **options[8..9]** is a 2-byte binary parameter in big-endian format, which is relevant for UX-Devices only. min = 0x0000, max = 0xFFFF = 65535ms. This parameter has two uses depending on the TEC technology code CTS_CHIP 1. CTS_CHIP is set. options[8..9] is the time in milliseconds to wait for MSR-Data after a card without chip or with broken chip is inserted. If options[8..9] == 0x0000, means do not wait for MSR-Data after card insertion and report CTS_NO_CHIP immediately. 2. CTS_CHIP is disable. options[8..9] sets a time window for reading MSR-Data in order to avoid the pitfall in UX-Devices of getting MSR-Data when inserting the card. options[8..9] is the time in milliseconds to wait for MSR-Data after a card is inserted. If MSR-Data is not read during this time window, MSR_Deactivate() shall be called, technology selection shall be terminated and cts_WaitSelection() shall return the value CTS_UX_MSRDATA_NOT_AVAILABLE_TIMEOUT. If options[8..9] == 0x0000, means wait for MSR-Data after card insertion until technology selection finishes. **options[10..11]**: is a 2-byte binary parameter in big-endian format, which becomes relevant only if

[in]	options_len	: length of options.

Returns

- CTS_OK : Success.
- CTS_IN_PROGRESS : Monitoring is already active. Call cts_WaitSelection() until it returns != CTS_IN_PROGRESS first.
- CTS_API_NOT_ALLOWED : API not allowed because TEC-callback is still in progress.
- CTS_PARAM : both CTS_NFC_ENABLE and CTS_VAS_ENABLE are set
- CTS_ERR_LOAD : CTS_NFC_ENABLE or CTS_VAS_ENABLE are set but NFC client library could not be loaded.
- CTS_ERROR : Failure.
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC

◆ cts_StopSelection()

int cts_StopSelection	(	unsigned char	*server_idx*	)	

This function stops a technology selection started via cts_StartSelection(). It will be called by application if waiting for a card is canceled by user or ECR break. Keep in mind that the technology selection may not be stopped immediately. Call cts_WaitSelection() to wait for termination of technology selection. After cts_WaitSelection() returns != CTS_IN_PROGRESS, it is safe to call cts_StartSelection() again.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).

Returns

- CTS_OK : Stopping technology selection is successfully requested
- CTS_NOT_STARTED : Technology selection is not running
- CTS_API_NOT_ALLOWED : API not allowed because TEC-callback is still in progress.
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC

◆ cts_WaitCardRemoval()

int cts_WaitCardRemoval	(	unsigned char	*server_idx*,
		cts_Callback	*cbf*,
		void *	*cb_data*
	)		

This function registers callback for card removal. The function returns immediately with one of the return values stated below. The callback is invoked as soon as the inserted card is removed or immediately if no card is inserted. Keep in mind that the callback is only invoked once. If you want to be informed about the next card removal as well, call this function again, even from within the callback function.

Attention: Do not call this function as long as other TEC/EMV functions are running and do not call other TEC/EMV functions until the callback has been invoked!

Attention: EMV CT Server can only handle one connection. So call EMV_CT_Disconnect() before using this function.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).
[in]	cbf	: callback function that is called when a card has been removed, must not be NULL.
[in]	cb_data	: data pointer that is passed on to the callback function.

Returns

- CTS_OK : Success.
- CTS_IN_PROGRESS : Waiting for card removal is already active.
- CTS_API_NOT_ALLOWED : API not allowed because TEC-callback is still in progress.
- CTS_PARAM : Missing parameter.
- CTS_ERROR : Internal error.
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC

◆ cts_WaitCardRemoval2()

int cts_WaitCardRemoval2	(	unsigned char	*server_idx*,
		unsigned short	*timeout_sec*
	)		

This function waits for card removal. The function does not return until card has been removed or timeout has occurred.

Attention: Do not call this function as long as other TEC/EMV functions are running and do not call other TEC/EMV functions until the function has returned!

Attention: EMV CT Server can only handle one connection. So call EMV_CT_Disconnect() before using this function.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).
[in]	timeout_sec	: timeout in seconds to wait for card removal.

Returns

- CTS_OK : Card has been removed.
- CTS_TIMEOUT : Timeout occurred.
- CTS_API_NOT_ALLOWED : API not allowed because TEC-callback is still in progress.
- CTS_ERROR : Internal error.
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC

◆ cts_WaitSelection()

int cts_WaitSelection	(	unsigned char	*server_idx*,
		unsigned char *	*usedTechnology*,
		unsigned char *	*dataBuffer*,
		unsigned short *	*dataBufferLength*,
		unsigned short	*timeout_msec*
	)		

This function waits for technology selection to finish.

Parameters

[in]	server_idx	: index of server in server configuration (see cts_ConfigureServer()).
[out]	usedTechnology	: technology that has been selected, only set if CTS_OK is returned. See TEC technology code . If CTS_DATA_TLV is set dataBuffer is in TLV format (this is the case if NFC or VAS was detected). In certain circumstances ('MSR after CTLS timeout' is set; UX MSR enhancements not enabled) it is possible that usedTechnology contains more than one technology at once, see documentation.

[out]	dataBuffer	: reference to buffer for output data, only filled if CTS_OK is returned. a) CTS_DATA_TLV is set in usedTechnology: contains tags, see TEC result data tags. b) CTS_DATA_TLV is not set in usedTechnology: If *usedTechnology & CTS_CHIP : contains ATR. If *usedTechnology & CTS_CTLS and CTS_PURE_CARD_DETECTION was set as option to cts_StartSelection() : contains card info delivered by EMV_CTLS_SmartReset(). If *usedTechnology & CTS_CTLS and CTS_PURE_CARD_DETECTION was not set : contains return value of EMV_CTLS_ContinueOffline().
[in,out]	dataBufferLength	: buffer size for output data, return data length; if the size of dataBuffer is too small to hold the whole output data, no special error code is returned, the return code is as usual, but the output buffer will be empty, dataBufferLength is set to 0. If return value is != CTS_OK, dataBufferLength is set to 0 to indicate that there is no data written in dataBuffer.
[in]	timeout_msec	: timeout in milliseconds to wait for technology selection to finish, min=0, max=65535ms. If technology selection is not finished after this timeout has expired, CTS_IN_PROGRESS is returned. In this case cts_WaitSelection() has to be called again. If a callback function is supplied to cts_StartSelection(), setting a timeout != 0 is not allowed.

Returns

- CTS_OK : Successful completion, card was detected. Not possible if CTS_NO_POWERON is set.
- CTS_NO_CHIP : Card without chip or with broken chip is inserted or card is inserted and CTS_NO_POWERON is set.
- CTS_IN_PROGRESS : Technology selection not completed. Another call of cts_StartSelection() will return CTS_IN_PROGRESS in this case.
- CTS_TIMEOUT : Timeout occurred, no card detected.
- CTS_PARAM : - usedTechnology is NULL pointer; - callback function supplied to cts_StartSelection() and timeout != 0.
- CTS_NOT_STARTED : cts_StartSelection() was not called previously.
- CTS_STOPPED : Technology selection was aborted by cts_StopSelection().

- CTS_CTLS_INIT : Contactless transaction was not set up correctly.
- CTS_ERROR : Internal error occurred.
- CTS_CTLS_NOT_ALLOWED : VFI-Reader has not yet finished previous transaction, e.g. still waiting for ContinueOnline.
- CTS_CTLS_EMV_NO_CARD : ADK-EMV has detected no medium to perform a contactless payment.
- CTS_UX_MSRDATA_NOT_AVAILABLE_TIMEOUT : Technology selection has been terminated because MSR-Data was not read during the time window set in the input parameter options[8..9] of the function cts_StartSelection(). This return code is relevant and possible for UX-Devices only.
- CTS_FORMAT , CTS_TLV , CTS_PARAMETER , CTS_UNKNOWN_CLA , CTS_UNKNOWN_INS , CTS_BLOCKED , CTS_NO_SERVER , CTS_IPC