Tracker Message Protocol

Version 0.17.04.12

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1. Introduction

1.1. Overview

Tracker Message Protocol (TMP) mainly provides client and server as a fast communication and messaging protocol, Device side through TMP can transmit Track data to the server side.

1.2. Glossary

API	Application Programming Interface
MSB	Most Significant Bit
TMP	Tracker Message Protocol
PDU	Protocol Data Unit
HEADER	Leading portion of the TMP message, common to all TMP PDUs

2. Tracker Message Protocol

The Tracker Message Protocol (TMP) is designed to provide a flexible data communications interface for transfer of message data between a server and client.

TMP is based on the exchange of request and response protocol data units (PDUs) between the client and the server over an underlying TCP/IP network connection.

2.1. TMP PDU Type and Format Definitions

Integer	An unsigned value with the defined number of octets. The octets will always be transmitted MSB first **(Big Endian)**.
C-Octet String	A series of ASCII characters terminated with the NULL character.
C-Octet String (Decimal)	A series of ASCII characters, each character representing a decimal digit (0 - 9) and terminated with the NULL character.
C-Octet String (Hex)	A series of ASCII characters, each character representing a Hexadecimal digit (0 - F) and terminated with the NULL character.
Octet String	A series of octets, not necessarily NULL terminated.
Octet String (Decimal)	A series of ASCII characters, each character representing a decimal digit (0 - 9) and not necessarily NULL terminated.

2.2. TMP PDU Format

PDU Header (Mandatory)				PDU Body (Optional)
Command Length	Command Id	Command Status	Sequence Number	PDU Body
4 octets	Length = (Command Length value - 4) Octets			

2.3. TMP PDU Layout

	TMP PDU Field	Size Octets	Type	Description
H E A	command length	4	Integer	The command length field defines the total octet length of the TMP PDU

D E R				packet including the length field.
	command id	4	Integer	The command id field identifies the particular TMP PDU. A unique command identifier is allocated to each TMP request PDU in the range: 0x00000000 to 0x000000 FF A unique command identifier is also allocated to each TMP response PDU in the range: 0x80000000 to 0x800000FF The complete list of TMP command codes is defined in 3.1.2
	command status	4	Integer	The command status field indicates the success or failure of a TMP request. It is relevant only in the TMP response PDU and it must contain a NULL value in a TMP request PDU. The complete list of TMP Error codes is defined in 3.1.3
	sequence number	4	Integer	This field contains a sequence number which allows TMP requests and responses to be associated for correlation purposes. The use of sequence numbers for message correlation allows TMP PDUs to be exchanged asynchronously. The sequence number should be increased monotonically for each request PDU and must be preserved in the associated TMP response PDU. The sequence number may range from: 0x00000001 to 0x7FFFFFFF.

	Field Name			
B O D Y	Mandatory Parameters	Var.	mixed	A list of mandatory parameters corresponding to that TMP PDU defined in the command id field.
	Optional Parameters	Var.	mixed	A list of Optional Parameters corresponding to that TMP PDU defined in the command id field.

2.4. TMP PDU Definition

2.4.1. Initial request syntax

	Field Name	Size octets	Type	Description	Ref.
H E A D E R	command length	4	Integer	Set to overall length of PDU	3.1.1
	command id	4	Integer	Value corresponding to initial request	3.1.2
	command status	4	Integer	Set to STATUS_ROK	3.1.3
	sequence number	4	Integer	Set to a unique sequence number. The associated initial response PDU should echo the same sequence number.	3.1.4
B O D Y	Service Type	4	Integer	Mandatory Parameter. Reference Service type.	3.2.1

2.4.2. Initial response syntax

	Field Name	Size octets	Type	Description	Ref.
H E A D E R	command length	4	Integer	Set to the overall length of PDU.	3.1.1
	command id	4	Integer	Value corresponding to initial response	3.1.2
	command status	4	Integer	Indicates the status of the original request.	3.1.3
	sequence number	4	Integer	Set to the same sequence number of original initial requests PDU	3.1.4

	Field Name	Size octets	Type	Description	Ref.
B O D Y	Initial Data	Var.	C-Octet String	Mandatory Parameter. Information of initial.	3.2.2

2.4.3. Access log request syntax

	Field Name	Size octets	Type	Description	Ref.
H E A D E R	command length	4	Integer	Set to overall length of PDU	3.1.1
	command id	4	Integer	Value corresponding to access logs request	3.1.2
	command status	4	Integer	Set to STATUS_ROK	3.1.3
	sequence number	4	Integer	Set to a unique sequence number. The associated access log response PDU should echo the same sequence number.	3.1.4
B O D Y	Service Type	4	Integer	Mandatory Parameter. Reference Service type.	3.2.1
	Access log Data	Var.	C-Octet String	Mandatory Parameter. JSON Data Type. Key "app_id" is mandatory.	3.2.3

2.4.4. Access log response syntax

	Field Name	Size octets	Type	Description	Ref.
H E A D E R	command length	4	Integer	Set to the overall length of PDU.	3.1.1
	command id	4	Integer	Value corresponding to access log response	3.1.2
	command status	4	Integer	Indicates the status of the original request.	3.1.3
	sequence number	4	Integer	Set to the same sequence number of original access logs requests PDU	3.1.4
B O D Y					

3. TMP Parameter Definition

This section describes the parameters which can be specified in a TMP command.

3.1. Command Header Parameters

3.1.1. Command length

The command length parameter indicates the length in octets of the TMP message. The TMP message header (including the command length field itself), the mandatory parameters and the optional parameters are all considered.

3.1.2. Command id

The command id field identifies the type of message the TMP PDU represents.

The complete set of Packet Command IDs and their associated values are defined in the following table.

Command ID	Value
Generic nack	0x80000000
Access log request	0x00000003
Access log response	0x80000003
Initial request	0x00000004
Initial response	0x80000004

3.1.3. Command status

The command status field of a TMP message response indicates the success or failure of a TMP request.

It is relevant only in the TMP response message and should be set to NULL in TMP request messages.

The complete set of TMP Error Codes and their associated values are defined in the following table.

Error Code	Value	Description
STATUS_ROK	0x00000000	No Error
STATUS_RINVMSGLEN	0x00000001	Message Length is invalid
STATUS_RINVCMDLEN	0x00000002	Command Length is invalid
STATUS_RINVCMDID	0x00000003	Invalid Command ID
STATUS_RINVBNDSTS	0x00000004	Incorrect BIND Status for given command
STATUS_RALYBND	0x00000005	Already in Bound State
Reserved	0x00000007	Reserved
STATUS_RSYSERR	0x00000008	System Error
Reserved	0x00000009 ~ 0x0000000F	Reserved
STATUS_RBINDFAIL	0x00000010	Bind Failed
STATUS_RINVBODY	0x00000040	Invalid Packet Body Data
STATUS_RINVCTRLID	0x00000041	Invalid Controller ID
STATUS_RINVJSON	0x00000042	Invalid JSON Data

3.1.4. Sequence number

A sequence number allows a response PDU to be correlated with a request PDU.

The associated TMP response PDU must preserve this field.

The allowed sequence number range is from 0x00000001 to 0x7FFFFFFF.

3.2. Mandatory TMP Parameters

3.2.1. Service Type

Type	Service
1	Mobile Device Tracker
2	Smart Charging Station
3	MORE SDK Service
4	Tracker Service
5	Appliance Tracker
6	Toy Tracker
7	IOT Tracker

3.2.2. Initial Data

Data Format (JSON)
<pre>{
"server": [{
"id": 0,
"name": "startTrack",
"ip": "175.98.119.121",
"port": 2306
},
{
"id": 1,
"name": "tracker",
"ip": "175.98.119.121",
"port": 2307
}]
}</pre>

3.2.3. Access log Data

Data Format (JSON)
<pre>{
    "app_id": "???",
    "xxx": "???",
    …..

}</pre> |

3.3. Optional Parameter

Optional Parameters are fields, which may be optionally included in a TMP packet.
Optional Parameters must always appear at the end of a packet.

4. Notes