|  |
| --- |
| Tracker Message Protocol |
| Version 0.17.04.12 |
| 2016.11.30 |

Table of Contents

[Tracker Message Protocol 1](file:///D:\Github\ControllerPlatform\Specification\Tracker%20Message%20Protocol.docx#_Toc482965222)

[Version 0.17.04.12 1](file:///D:\Github\ControllerPlatform\Specification\Tracker%20Message%20Protocol.docx#_Toc482965223)

[2016.11.30 1](file:///D:\Github\ControllerPlatform\Specification\Tracker%20Message%20Protocol.docx#_Toc482965224)

[Table of Contents 2](#_Toc482965225)

[1. Introduction 3](#_Toc482965226)

[1.1. Overview 3](#_Toc482965227)

[1.2. Glossary 4](#_Toc482965228)

[2. Tracker Message Protocol 5](#_Toc482965229)

[2.1. TMP PDU Type and Format Definitions 5](#_Toc482965230)

[2.2. TMP PDU Format 5](#_Toc482965231)

[2.3. TMP PDU Layout 5](#_Toc482965232)

[2.4. TMP PDU Definition 7](#_Toc482965233)

[2.4.1. Initial request syntax 7](#_Toc482965234)

[2.4.2. Initial response syntax 7](#_Toc482965235)

[2.4.3. Access log request syntax 8](#_Toc482965236)

[2.4.4. Access log response syntax 8](#_Toc482965237)

[3. TMP Parameter Definition 9](#_Toc482965238)

[3.1. Command Header Parameters 9](#_Toc482965239)

[3.1.1. Command length 9](#_Toc482965240)

[3.1.2. Command id 9](#_Toc482965241)

[3.1.3. Command status 9](#_Toc482965242)

[3.1.4. Sequence number 10](#_Toc482965243)

[3.2. Mandatory TMP Parameters 10](#_Toc482965244)

[3.2.1. Service Type 10](#_Toc482965245)

[3.2.2. Initial Data 11](#_Toc482965246)

[3.2.3. Access log Data 11](#_Toc482965247)

[3.3. Optional Parameter 11](#_Toc482965248)

[4. Notes 11](#_Toc482965249)

# Introduction

## 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.

## 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 |

# 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.

## 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. |

## 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 | | | |

## TMP PDU Layout

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

## TMP PDU Definition

### Initial request syntax

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| H  E  A  D  E  R | Field Name | Size  octets | Type | Description | Ref. |
| 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 |
|  |  |  |  |  |

### Initial response syntax

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

### Access log request syntax

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| H  E  A  D  E  R | Field Name | Size  octets | Type | Description | Ref. |
| 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 |

### Access log response syntax

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| H  E  A  D  E  R | Field Name | Size  octets | Type | Description | Ref. |
| 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 |  |  |  |  |  |
|  |  |  |  |  |

# TMP Parameter Definition

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

## Command Header Parameters

### 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.

### 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 |

### 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 |

### 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.

## Mandatory TMP Parameters

### 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 |

### Initial Data

|  |
| --- |
| **Data Format (JSON)** |
| {  "server": [{  "id": 0,  "name": "startTrack",  "ip": "175.98.119.121",  "port": 2306  },  {  "id": 1,  "name": "tracker",  "ip": "175.98.119.121",  "port": 2307  }]  } |

### Access log Data

|  |
| --- |
| **Data Format (JSON)** |
| {  "app\_id": "???",  "xxx": "???",  …..  } |

## 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.

# Notes