



# DISQUBE MESSAGE DESCRIPTION



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# 1. Introduction

This document, also called DMD (**Disque Message Description**), describes all messages exchanged between the workers, the manager and the client. There are two kind of interactions: Manager-Worker (and vice versa) and Client-Manager (and vice versa). There are no interactions between client and workers. Communication is performed as a combination of UDP and TCP messages. In particular, UDP messages are used when requesting information and other kind of unimportant data, while TCP is mainly used for job requesting and job results.

## 1.1. Common Header

All messages must have a common header, both TCP and UDP messages.

Byte 3	Byte 2	Byte 1	Byte 0
COUNTER		ID	
TYPE	SUBTYPE	X	X

Here is the description of all the fields

Byte Counter	Field Name	Field Description
[0-1]	ID	A unique identifier for a message exchange. Each different exchange of message must have a different value
[2-3]	COUNTER	The message counter. This value uniquely identify a single message in a message exchange.
[6]	SUBTYPE	The message subtype. Possible subtypes are: <ul style="list-style-type: none"><li>- DISCOVER HELLO = 1</li><li>- DISCOVER RESPONSE = 2</li></ul>
[7]	TYPE	The message main type. Possible type are: <ul style="list-style-type: none"><li>- DISCOVER = 1</li></ul>

The message entire message type is defined as: TYPE (MSB) + SUBTYPE (LSB).

## 2. Messages

### 2.1. Qube Master - Qube Workers

This section describes all the messages sent and received by the master and all workers.

#### 2.1.1. Discover Protocol

This protocol is used when the Qube master/manager first starts. If, in the configuration file, the DISCOVER flag is set to true, then the master given the subnet address and the subnet mask where the qube workers belongs, will send a number of UDP messages to all possible IP addresses in the specified subnet. This kind of message is known as *DISCOVER HELLO*. When a qube worker receives the HELLO message it will responds with the DISCOVER RESPONSE.

##### 2.1.1.1. Discover Hello Message

The DISCOVER HELLO message is only sent by the Qube master to workers.

Byte 3	Byte 2	Byte 1	Byte 0
COMMON HEADER			
UDP PRT		TCP PRT	

Here is the description of the fields

Byte Counter	Field Name	Field Description
[0-7]	COMMON HEADER	The Common header of all messages exchanged
[8-9]	TCP PRT	The TCP Port on which the Manager has bind
[10-11]	UDP PRT	The UDP Port on which the Manager has bind

##### 2.1.1.2. Discover Response Message

The DISCOVER RESPONSE message is sent by the worker to the manager as a response to the related DISCOVER HELLO message. This response message should be sent on the UDP port specified on the received hello message. Since it is on the same message exchange, its ID must remain the same of the received message, while the counter should increase by one.

Byte 3	Byte 2	Byte 1	Byte 0
COMMON HEADER			
UDP PRT		TCP PRT	
MRY	CPUS	QDIM	

Here is the description of the fields.

Byte Counter	Field Name	Field Description
[0-7]	COMMON HEADER	The Common header of all messages exchanged
[8-9]	TCP PRT	The TCP Port on which the Worker has bind
[10-11]	UDP PRT	The UDP Port on which the Worker has bind
[12-13]	QDIM	Max dimension of the task queue
[14]	CPUS	The number of available processors
[15]	MRY	In GB the amount of available RAM memory