The prototype of message format

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Messages(Variable) | | | |

**1. UDP broadcast requesting call back:**

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Source port number(2) | | **Destination port number(4)** | |
| Sender’s username(4) | | | |
| Sender’s IP address(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 00000001** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Reserved | **1** | **Reserved for future use**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Source port # | **2** | **Contain sender’s Source port number.**  **The Default number is 9876.** |
| Destination port # | **2** | **Contain receiver’s Destination port number.**  **The Default number is 9876.** |
| Sender’s username | **4** | **Contain sender’s username** |
| Sender’s IP address | **4** | **Contain sender’s IP address** |

2. Server Hand Shake Start

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Source port number(2) | | Destination port number(2) | |
| Server’s name(4) | | | |
| Server’s IP address(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 11110001** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Reserved | **1** | **Reserved for future use**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Source port # | **2** | **Contain sender’s Source port number.**  **The Default number is 9876.** |
| Destination port # | **2** | **Contain receiver’s Destination port number.**  **The Default number is 9876.** |
| Sender’s username | **4** | **Contain server’s username** |
| Sender’s IP address | **4** | **Contain server’s IP address** |

3. Client Hand Shake Start

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Source port number(2) | | **Destination port number(2)** | |
| Client’s IP address(4) | | | |
| Target’s IP address(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 00000010** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Reserved | **1** | **Reserved for future use**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Source port # | **2** | **Contain sender’s Source port number.**  **The Default number is 9876.** |
| Destination port # | **2** | **Contain receiver’s Destination port number.**  **The Default number is 9876.** |
| Client’s IP address(4) | **4** | **Contain client’s IP address** |
| Target’s IP address(4) | **4** | **Contain target’s IP address** |

4. Server Accept

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Server’s ACK (1)** |
| Options(128) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 11110010** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Server’s ACK | **1** | **To confirm that messages has been received by server**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |

5. Client Accept

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Client’s ACK (1)** |
| Options(128) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 00000011** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Client’s ACK | **1** | **To confirm that messages has been received by client**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |

6. Client Request Update

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Update sign(1)** |
| Options(128) | | | |
| Sender’s username(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 00000100** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Update sign | **1** | **To enable or disable the update request**  **Enable: 10000000, Disable: 00000000** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Sender’s username | **4** | **Contain sender’s username** |

7. Server Confirmation of update message

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Confirmation sign(1)** |
| Options(128) | | | |
| Confirmed username(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 11110011** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Confirmation sign | **1** | **The confirmation sign with 8 bits**  **Confirmed: 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Confirmed username | **4** | **Contain Confirmed username from the server** |

8. Client request info from server

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Sender’s username(4) | | | |
| Sender’s IP address(4) | | | |
| Target’s username(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 00000101** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Reserved | **1** | **Reserved for future use**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Sender’s username | **4** | **Contain username from the client** |
| Sender’s IP address | **4** | **Contain IP address from the client** |
| Target’s username | **4** | **Contain username client want to connect** |

9. Server sends requested info

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Target’s username(4) | | | |
| Target’s IP address(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 11110100** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Reserved | **1** | **Reserved for future use**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Target’s username | **4** | **Contain Target’s username from the server** |
| Target’s IP address | **4** | **Contain Target’s IP address from the server** |

10. Decline to connect Message

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Decline sign(1)** |
| Options(128) | | | |
| Message(Empty) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 00000110** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Decline sign | **1** | **Decline sign of refusing messages.**  **Default set to 00000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Message | **0** | **Do not have message part.** |

11. Chat Message

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Reserved(1)** |
| Options(128) | | | |
| Message(Variable) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 11** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Reserved | **1** | **Reserved for future use**  **Default set to 10000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Message | **Variable** | **Contain messages that users want to transmit from one end to another.** |

**Error Message:**

12. Lookup Failed

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Failed sign(1)** |
| Options(128) | | | |
| Target’s username(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 10100001** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Failed sign | **1** | **Failed sign showing that the lookup has failed.**  **Default set to 00000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Target’s username | **4** | **Tell clients the lookup for target’s IP address has failed** |

13. Error

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **Error sign(1)** |
| Options(128) | | | |
| Message(Empty) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 10100010** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| Error sign | **1** | **Error sign showing there is an error.**  **Default set to 00000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Message | **0** | **Do not have message part.** |

14. Name collision

|  |  |  |  |
| --- | --- | --- | --- |
| 0\*8bits | 1\*8bits | 2\*8bits | 3\*8bits |
| Op(1) | **Message Length(2)** | | **collision sign(1)** |
| Options(128) | | | |
| Target’s username(4) | | | |

|  |  |  |
| --- | --- | --- |
| FIELD | OCTETS | DESCRIPTION |
| Op | **1** | **Message op code / message type.**  **Op code: 10100011** |
| Message Length | **2** | **Total length of the message. (to tell the exact length of the Message part which is variable in design)** |
| collision sign | **1** | **collision sign showing there is a name collision.**  **Default set to 00000000.** |
| Options | **128** | **Reserved for further use(Need to specify)** |
| Target’s username | **4** | **Contain target’s username that cause the name collision** |