📘 PYLAN-MSG (BOJSOFT) — Full Documentation

Latest Version

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1 Overview

PYLAN-MSG is a **UDP-based LAN chat application** with:

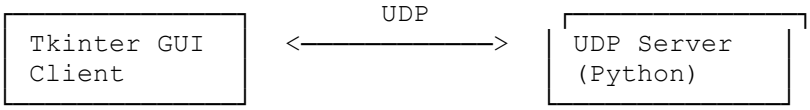
- Multiple chat groups
- Colorized message bubbles
- Message history
- Server discovery & connection testing
- Public & private groups
- GUI client built with **Tkinter**
- Lightweight UDP server with history limits

It is designed for **local networks (LAN)** and prioritizes:

- Low bandwidth usage
- Low CPU usage
- Simple protocol
- Easy extensibility

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2 Architecture



- **Protocol:** UDP (connectionless, fast)
- **Transport:** socket + threading
- **State:** Stored server-side per group
- **Persistence:** Text files per group

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3 Server Documentation

3.1 Server Responsibilities

The server:

- Responds to connection tests (`PING`)
- Receives and broadcasts messages
- Stores messages per group
- Sends message history (limited)
- Tracks active clients per group
- Provides discoverable group lists

3.2 Server Configuration

```
SERVER_IP = "0.0.0.0"
SERVER_PORT = 9000
MAX_HISTORY = 500
LOG_DIR = "chat_logs"
```

Setting	Description
`SERVER_IP`	IP address to bind to
`SERVER_PORT`	UDP port
`MAX_HISTORY`	Max messages sent to client
`LOG_DIR`	Folder where chat logs are stored

3.3 Group System

- Each **group** = one chat room
- Groups are identified by **string name**
- A group log file is created automatically:

```
chat_logs/<group_name>.txt
```

🔒 Private Groups

- Any group ending with `_priv` is **private**
- Example:

```
staff_priv
admins_priv
```

- Private groups:
  - Work normally
  - ❌ Do **NOT** appear in group discovery

3.4 Server Commands (Protocol)

All messages are UTF-8 encoded strings.

🔹 PING

Used to test server connectivity.

Client → Server

```
PING
```

Server → Client

```
PONG
```

🔹 SEND

Send a chat message.

Client → Server

```
SEND|<group>|<bubble_bg>|<bubble_fg>|<text>
```

Example

```
SEND|general|#1e90ff|white|Alice | 12:01 | Hello!
```

Server behavior

- Saves message to file
- Broadcasts message to all clients in that group
- Registers sender as member of that group

🔹 HISTORY

Request previous messages.

Client → Server

```
HISTORY|<group>
```

Server behavior

- Sends **last 500 messages only**
- Sends messages line-by-line
- Ends with:

```
__END__
```

🔹 **DISCOVER**

Request list of public groups.

Client → Server

```
DISCOVER
```

Server → Client

```
GROUP|group_name
GROUP|another_group
...
__END__
```

Rules:

- Only groups **not ending in** `_priv`
- Random selection
- Maximum **100 groups**

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4 Client Documentation (Tkinter App)

4.1 Client Features

✔ Splash screen
✔ Server connection tester
✔ Username lock (cannot change after set)
✔ Group joining
✔ Message history loading
✔ Auto-scroll chat
✔ Color picker (bubble + text)
✔ Theme editor
✔ Group discovery popup

4.2 UI Sections

🔹 **Splash Screen**

- Displays **BOJSOFT** branding
- Fades out automatically
- Launches main app

- **Server Section**

Fields:

- Server IP
- Port
- **Connect** button

Connect button

- Sends `PING`
- Waits for `PONG`
- Sets `connected = True`
- Logs success or failure

- **Username Section**
  - Username entry
  - **Set** button

Rules:

- Username can only be set once
- Entry becomes disabled after set
- Required before joining a group

- **Color & Theme Section**
  - Bubble color picker
  - Text color picker
  - Live preview
  - Theme editor popup

Uses:

`tkinter.colorchooser.askcolor()`

All colors are valid hex values.

- **Group Section**
  - Group name entry
  - **Join** button

Rules:

- Must be connected
- Must have username
- Clears chat when switching groups
- Automatically requests history

🔹 **Chat Area**

- Scrollable canvas
- Message bubbles
- Auto-scrolls to newest message
- Supports long messages (wraplength)

🔹 **Message Input**

- Text entry
- Enter key sends
- Send button sends

4.3 Group Discovery Popup

Activated by **Discover Groups** button.

Behavior:

1. Opens popup window
2. Sends `DISCOVER` to server
3. Displays up to 100 groups
4. Clicking a group:
    - Fills group entry
    - Automatically joins it

Private groups (`_priv`) never appear.

4.4 Message Flow Example

Sending a Message

```
User types → Client SEND →
Server saves →
```

```
Server broadcasts →
Other clients display
```

Joining a Group

```
Join →
Clear chat →
HISTORY request →
Server sends last 500 →
Display →
Live messages continue
```

4.5 Performance & Limits

Feature	Limit
Message size	~4 KB (UDP safe)
History per group	500 messages
Discovered groups	100
Transport	UDP
Threads	One per packet