| Protocol       | Creator          | First public | License        | Identity (no    | Asynchron      | Transport I   |
|----------------|------------------|--------------|----------------|-----------------|----------------|---------------|
| Jami (based o  | Savoir-faire Li  | 5/1/2015     | Open standar   | 40-digit addre  | Yes            | Yes           |
| Bitmessage     | Jonathan War     | 11/1/2012    | Open standar   | Alphanumeric    | Yes            | Yes           |
| Signal Protoco | Signal Messen    | 2/1/2014     | Open standar   | Phone numbe     | Yes            | Yes           |
| Gadu-Gadu      | GG Network       | 7/17/2000    | Proprietary    | Unique numb     | Yes            | Yes           |
| Skype          | Skype            | 8/1/2003     | Proprietary    | Username        | Yes            | Proprietary   |
| XMPP/Jingle    | Jeremie Miller   | 1/1/1999     | Open standar   | Jabber ID (JID) | Yes            | Yes           |
| MTProto (Tele  | Telegram Mes     | 8/1/2013     | Open standar   | Phone numbe     | Yes            | Yes           |
| RVP (Window    | Microsoft        | 3/1/1997     | Proprietary (D | Windows Acti    | No             | No            |
| Steam Friend   | s Valve Corpora  | 9/12/2003    | Proprietary    | SteamID/User    | Yes            | Proprietary   |
| YMSG (Yahoo    | Yahoo!           | 3/9/1998     | Proprietary    | Username        | Yes            | No            |
| Matrix         | Matrix.org       | 9/1/2014     | Open standar   | Matrix user ID  | Yes            | Yes, mandator |
| Zephyr Notifi  | MIT              | 1/1/1987     | Open standar   | Kerberos princ  | Yes            | No            |
| Mumble         | Thorvald Natv    | 7/1/1999     | Open standar   | Username        | Yes            | Yes           |
| IRC            | Jarkko Oikarin   | 8/1/1988     | Open standar   | Nickname!Use    | Yes, but via a | Yes, dependin |
| Windows Me     | s Microsoft      | 1/1/1990     | Proprietary (D | NetBIOS         | Yes            | No            |
| Echo           | spot-on.sf.net   | 1/1/2013     | Open standar   | Key             | Yes            | Yes, optional |
| MSNP (Windo    | Microsoft        | 7/1/1999     | Proprietary    | Email address   | Yes            | No            |
| Briar          | Briarproject.o   | 5/9/2018     | Open standar   | Public & Priva  | Yes            | Yes           |
| OSCAR (AIM,    | I AOL            | 1/1/1997     | Proprietary (D | Username, Em    | Yes            | Yes (Aim Pro, |
| Ricochet       | Invisible.im     | 3/1/2014     | Open standar   | Tor onion add   | Yes            | Yes           |
| TOX (based o   | r irungentoo (gi | 6/1/2013     | Open standar   | Public & Priva  | Yes            | Yes           |
| SIP/SIMPLE     | IETF             | 1/1/1996     | Open standar   | user@hostnar    | Yes            | Yes           |
| TOC2           | AOL              | 9/1/2005     | Proprietary (D | Username or I   | Yes            | No            |
| Tuenti         | Tuenti           | 1/1/2006     | Proprietary    | Username        | Yes            | Yes           |
| Bonjour        | Apple Inc.       | 8/1/2002     | Proprietary Fr | Username        | No             | No            |
| SMS/MMS/E      | Friedhelm Hill   | 1/1/1985     | Proprietary    | Phone numbe     | Yes            | No            |

## End-to-end Unlimited r Bulletins to One-to-mai Spam proto Group, cha Audio/VoIP Yes Yes No Yes Medium Yes Yes

| Yes           | Yes             | No    | Yes            | Medium         | Yes            | Yes |
|---------------|-----------------|-------|----------------|----------------|----------------|-----|
| Yes           | Yes             | No    | Yes            | Yes (through p | Yes            | No  |
| Yes           | Yes             | ?     | Yes            | Yes, contact b | Yes            | Yes |
| No            | Yes             | No    | Centralistic   | Yes (simple)   | Yes            | Yes |
| No            | No              | No    | Centralistic   | client-based   | Yes            | Yes |
| Optional, mul | Yes             | Yes   | Unicast lists  | Several standa | Optional       | Yes |
| Optional      | Yes             | No    | Yes            | Yes, contact b | Yes            | Yes |
| No            | ?               | No    | Centralistic   | None           | No             | ?   |
| ?             | No, although    | ı Yes | ?              | No             | Yes            | Yes |
| No            | No              | Yes   | Centralistic   | Yes            | Yes            | Yes |
| Optional      | Yes             | No    | Yes            | Yes (using plu | Yes            | Yes |
| No            | Yes             | Yes   | Yes            | No             | Yes            | No  |
| No            | Only for certif | No    | Centralistic   | Yes            | Yes            | Yes |
| OTR by DM to  | No              | No    | Simplistic mul | Medium         | Yes (everyone  | No  |
| No            | Yes             | Yes   | Yes            | No             | No             | No  |
| Yes           | Yes             | Yes   | Yes            | Yes            | Yes            | No  |
| No            | Only for certif | No    | Centralistic   | Yes            | Yes            | Yes |
| Yes           | Yes             | Yes   | Yes            | Yes            | Yes            | No  |
| No            | No              | No    | Centralistic   | client-based   | Yes (Multiple, | Yes |
| Yes           | Yes             | No    | Yes            | Yes            | Yes            | No  |
| Yes           | Yes             | Yes   | ?              | Yes            | Yes            | Yes |
| Yes           | Yes             | Yes   | No             | Medium         | ?              | Yes |
| No            | No              | No    | Centralistic   | No             | paying memb    | ?   |
| No            | Yes             | ?     | Yes            | Yes            | Yes            | Yes |
| No            | Yes             | No    | multicast      | Medium         | No             | No  |
| No            | About 250 co    | r No  | serial message | Medium         | No             | Yes |
|               |                 |       |                |                |                |     |

## Webcam/ViBatch file s Media sync Serverless Protocol

| Yes | Yes     | No  | Yes        | Jami (based on DHT and SIP)         |  |
|-----|---------|-----|------------|-------------------------------------|--|
| No  | Yes     | No  | Yes        | Bitmessage                          |  |
| Yes | Yes     | Yes | No         | Signal Protocol                     |  |
| Yes | Yes     | No  | No         | Gadu-Gadu                           |  |
| Yes | Yes     | No  | No         | Skype                               |  |
| Yes | Yes     | Yes | Optional   | XMPP/Jingle (Google Talk)           |  |
| No  | Yes     | Yes | No         | MTProto (Telegram)                  |  |
| ?   | No      | No  | No         | RVP (Windows Messenger, etc.)       |  |
| No  | No      | No  | No         | Steam Friends                       |  |
| Yes | Yes     | No  | No         | YMSG (Yahoo! Messenger)             |  |
| Yes | Yes     | Yes | No         | Matrix                              |  |
| No  | No      | No  | No         | Zephyr Notification Service         |  |
| No  | Yes     | No  | No         | Mumble                              |  |
| No  | Yes     | No  | No         | IRC                                 |  |
| No  | No      | No  | No         | Windows Messenger service           |  |
| No  | Yes     | Yes | Yes        | Echo                                |  |
| Yes | Yes     | Yes | No         | MSNP (Windows Live Messenger, etc.) |  |
| No  | No      | No  | Yes        | Briar                               |  |
| Yes | Yes     | No  | No         | OSCAR (AIM, ICQ)                    |  |
| No  | Yes     | No  | Yes        | Ricochet                            |  |
| Yes | Yes     | ?   | Yes        | TOX (based on DHT)                  |  |
| Yes | Yes     | No  | Depends on | pends on ir SIP/SIMPLE              |  |
| ?   | Partial | ?   | No         | TOC2                                |  |
| Yes | Yes     | ?   | No         | Tuenti                              |  |
| No  | Yes     | No  | Yes        |                                     |  |
| No  | No      | No  | ?          | SMS                                 |  |