

**MSN Messenger, AOL Instant Messenger,
Pidgin, Excite/Pal, Gadu-Gadu, Google Talk, iChat,
ICQ, Jabber, Qnext, QQ, Meetro, Skype,
Trillian, Yahoo! Messenger**

Instant Messaging (IM)

Instant Messaging

- IM, as we know it today, began with ICQ ('96) and quickly a large number of similar IM networks emerged (AIM, MSN, Yahoo).
- Integrated in to many other apps, gmail, facebook
- Multi-protocol IM clients (Gaim, Trillian) exist that bridge these different communities.
- Increasing IM is not only for personal use but is found in the business world and even the military (IM between soldiers!).
- Lets consider one protocol – MSNP (Mobile Status and Notification Protocol). Used by MSN Messenger, other MS products and 3rd party vendors.
 - 330 million users
- Official protocol details are hard to come by. Many developers start here - 'MSNP12'
 - http://msnpiki.msnfanatic.com/index.php/Main_Page
- Early IETF draft MSNP1 (1999, Microsoft)
 - http://www.hypothetic.org/docs/msn/ietf_draft.txt

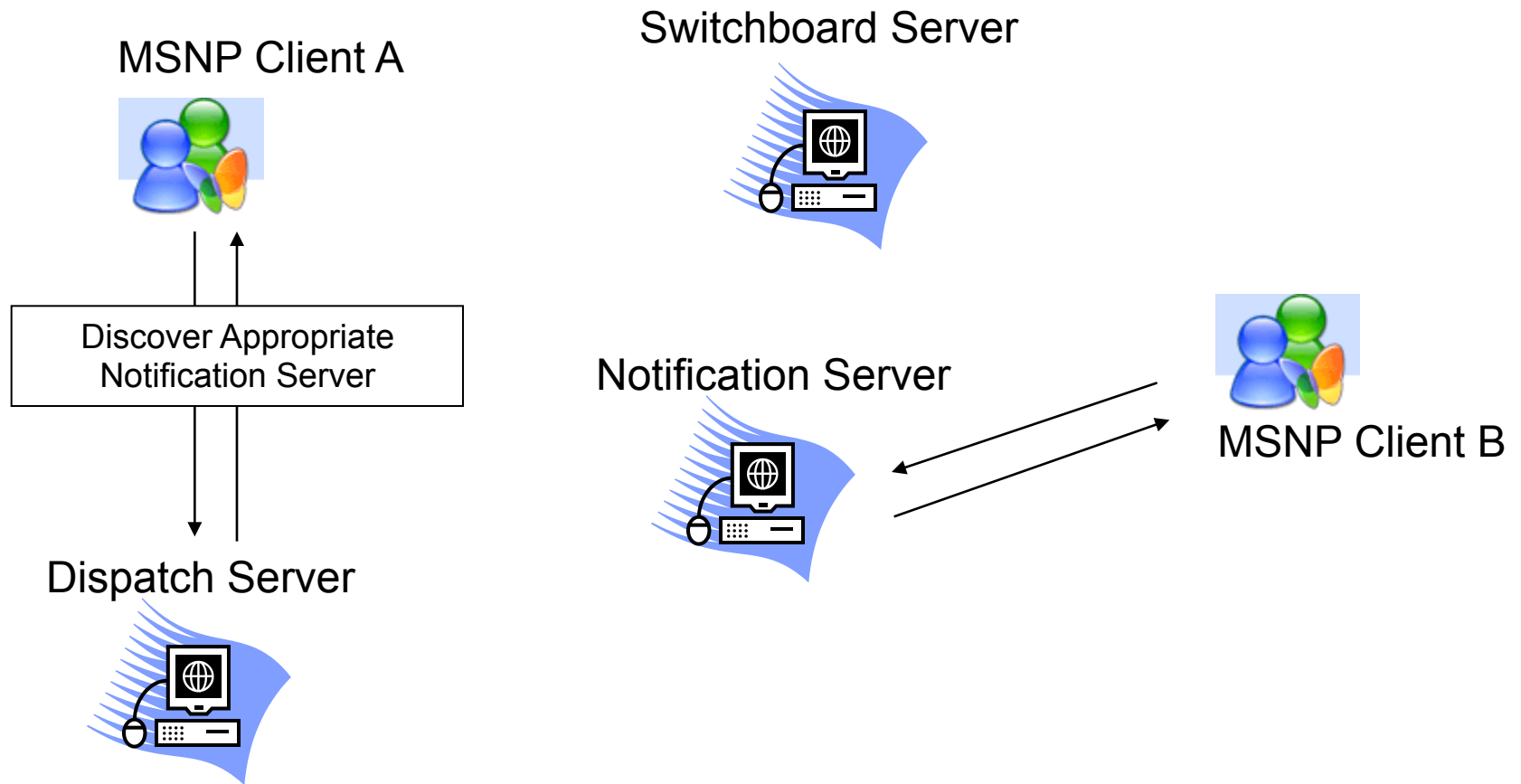
MSNP

- Mobile Status and Notification Protocol (MSNP).
- Supports ‘presence’, ‘messaging’ and direct file transfers.
 - Presence: Providing online status (i.e., busy, away), and attributes about available resources (i.e., webcam) of the IM client.
 - Messaging: The exchange of messages between IM clients.
- MSNP clients connect to multiple parties during their operation:
 - Dispatch Server: Provides client with an IP of a Notification Server.
 - Notification Server: Provides authentication, responsible for ‘presence’ maintenance, supports the use of switchboards.
 - Switchboard Server: IM clients connect to the same switchboard via which messages are exchanged.
 - Other MSNP clients: Allow a P2P exchange of files (images, custom emoticons).
- Uses TCP between client and servers on known ports for out of band between clients (file transfer)

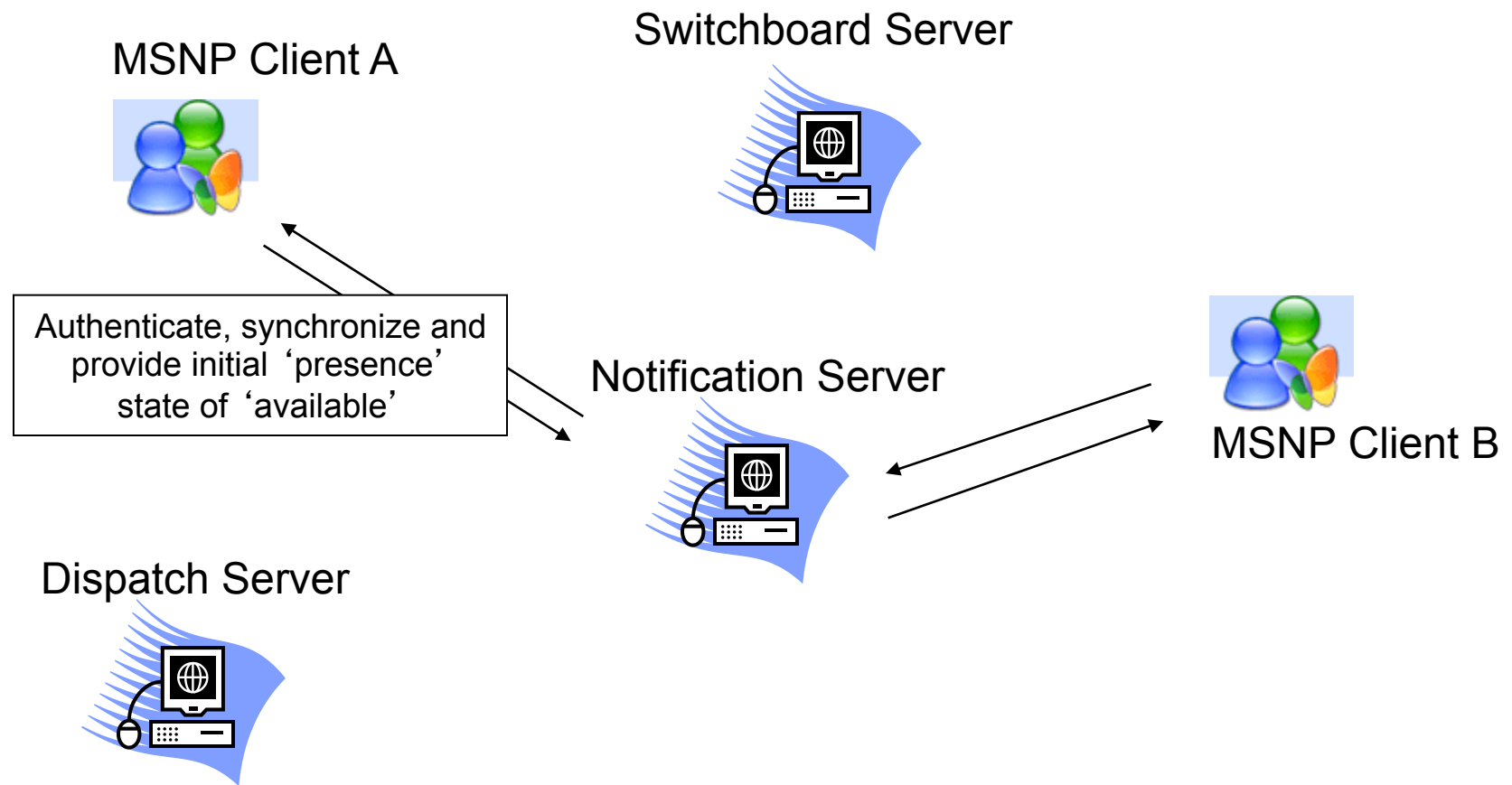
More information

- The course book does not cover IM
- The spec defines many of the messages used in the example scenario and defines the functionality of the various servers
- I would recommend that you read the spec
 - http://www.hypothetic.org/docs/msn/ietf_draft.txt

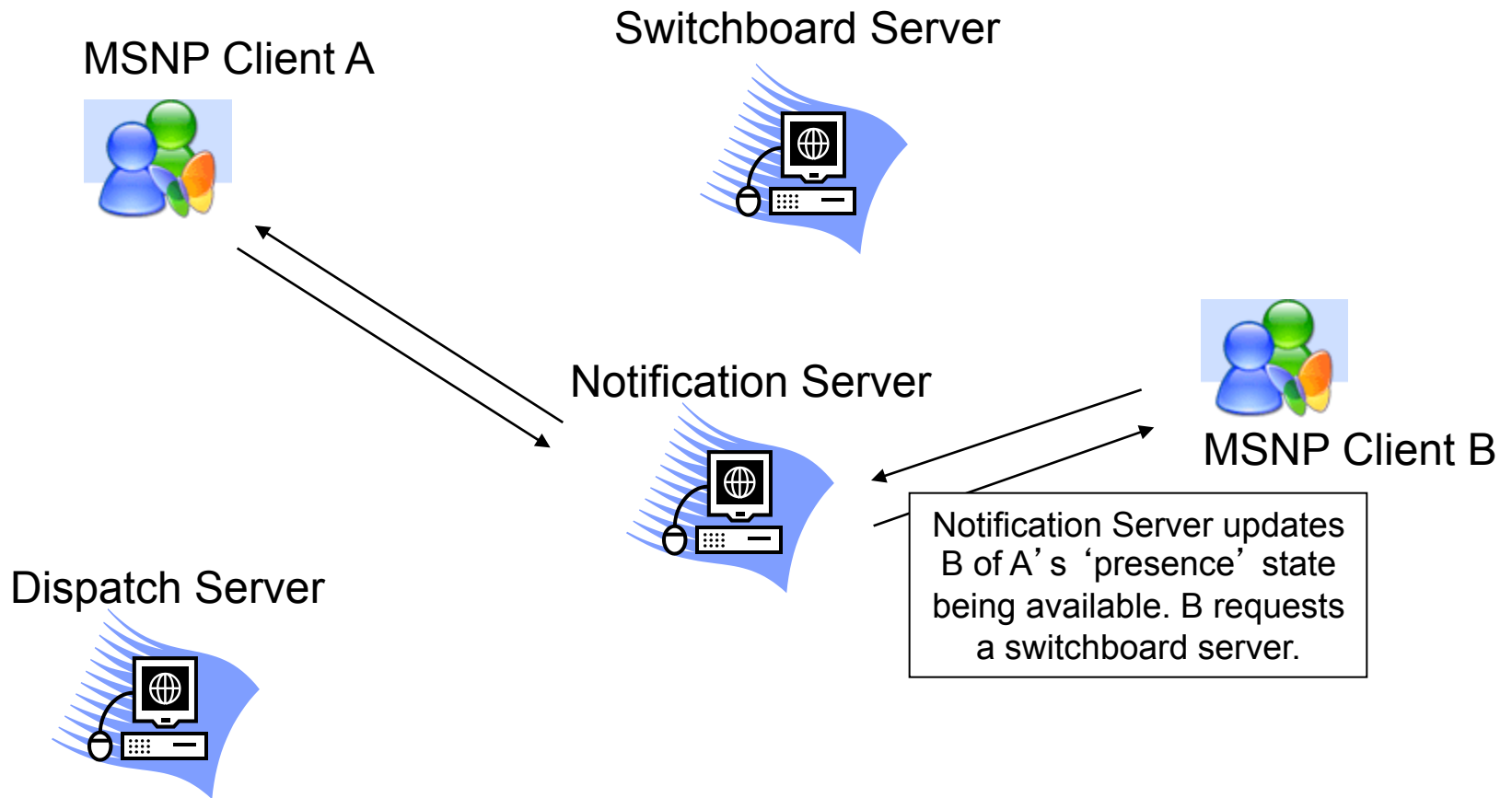
MSNP in action



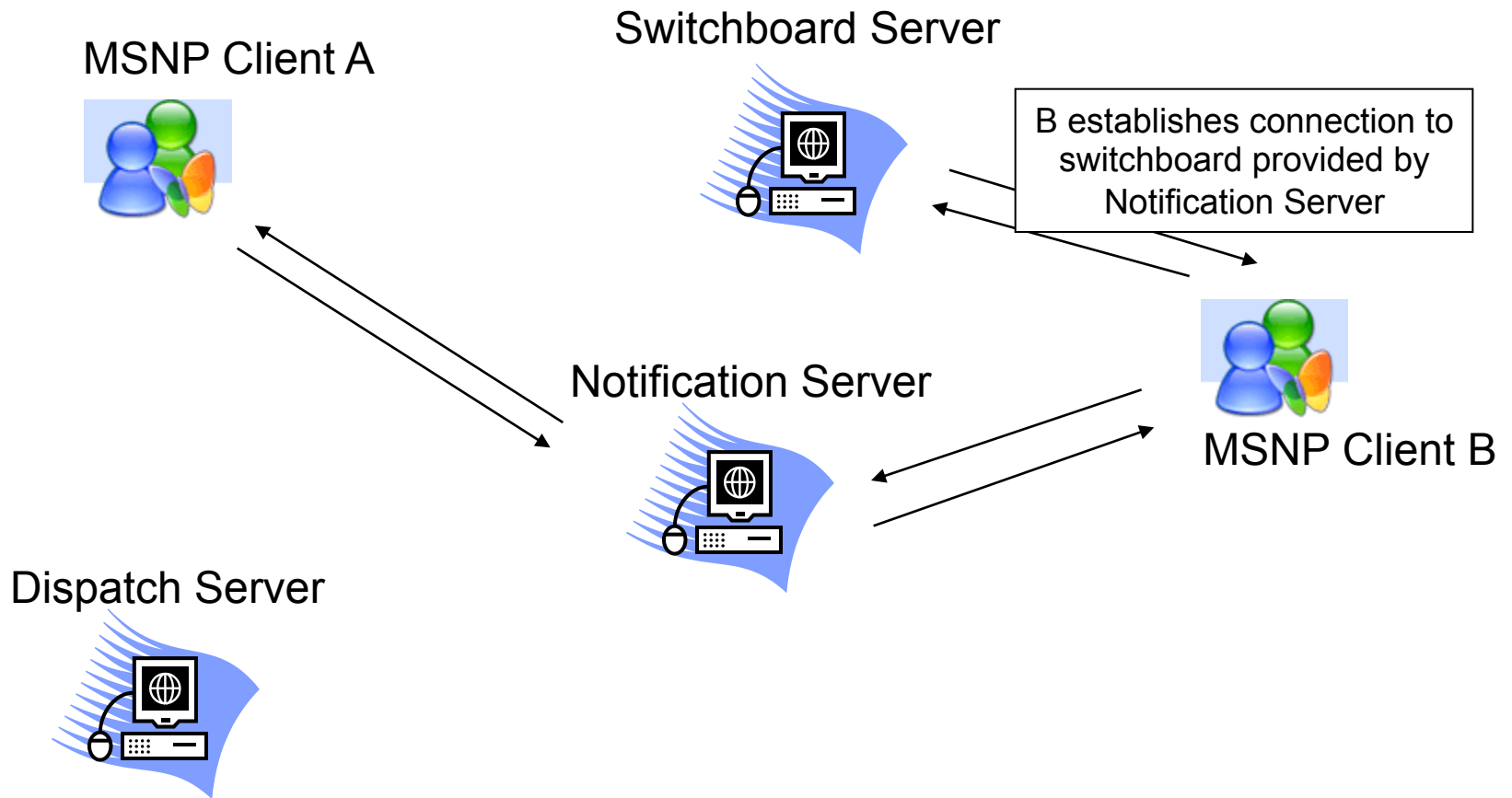
MSNP in action



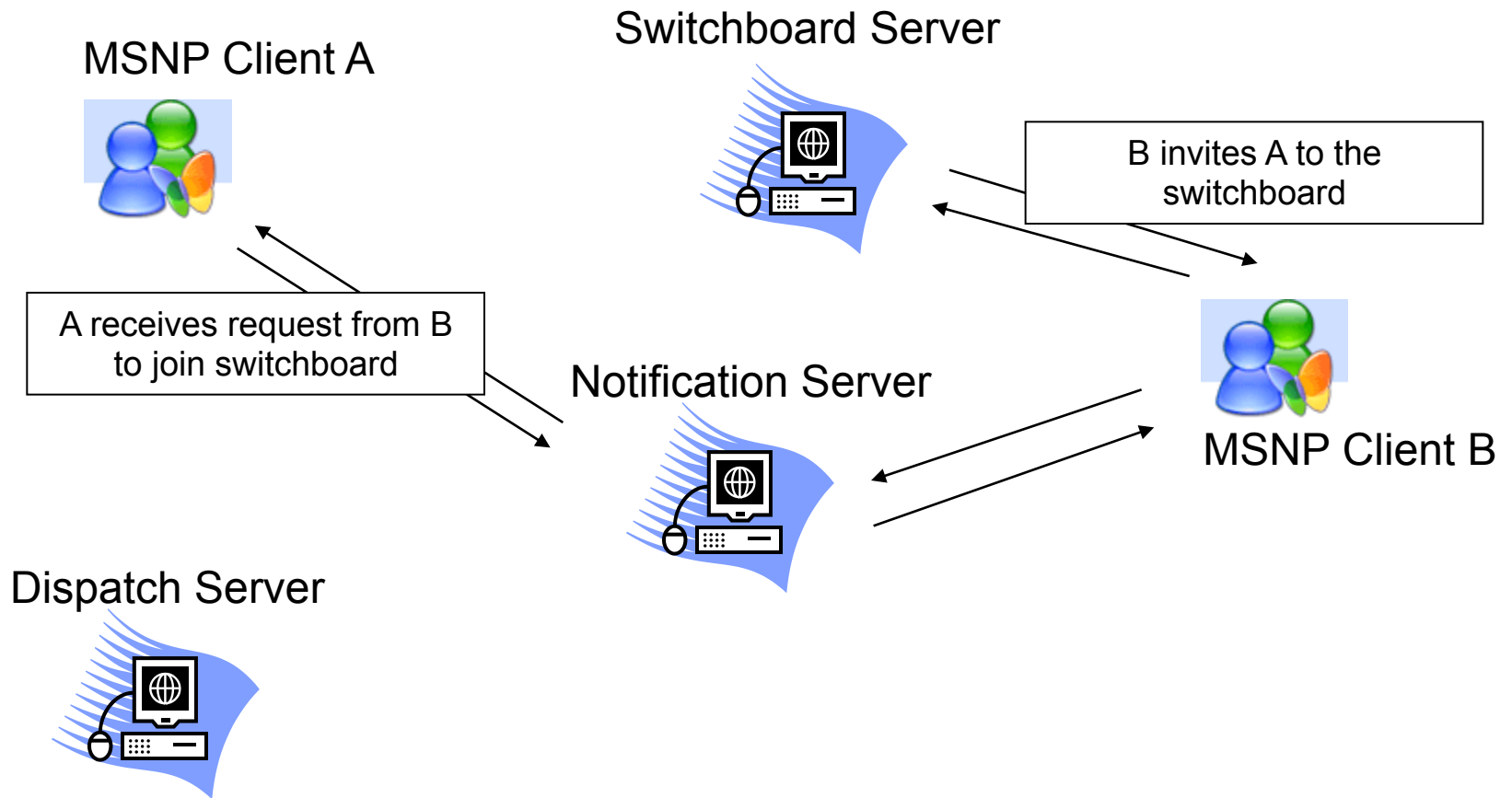
MSNP in action



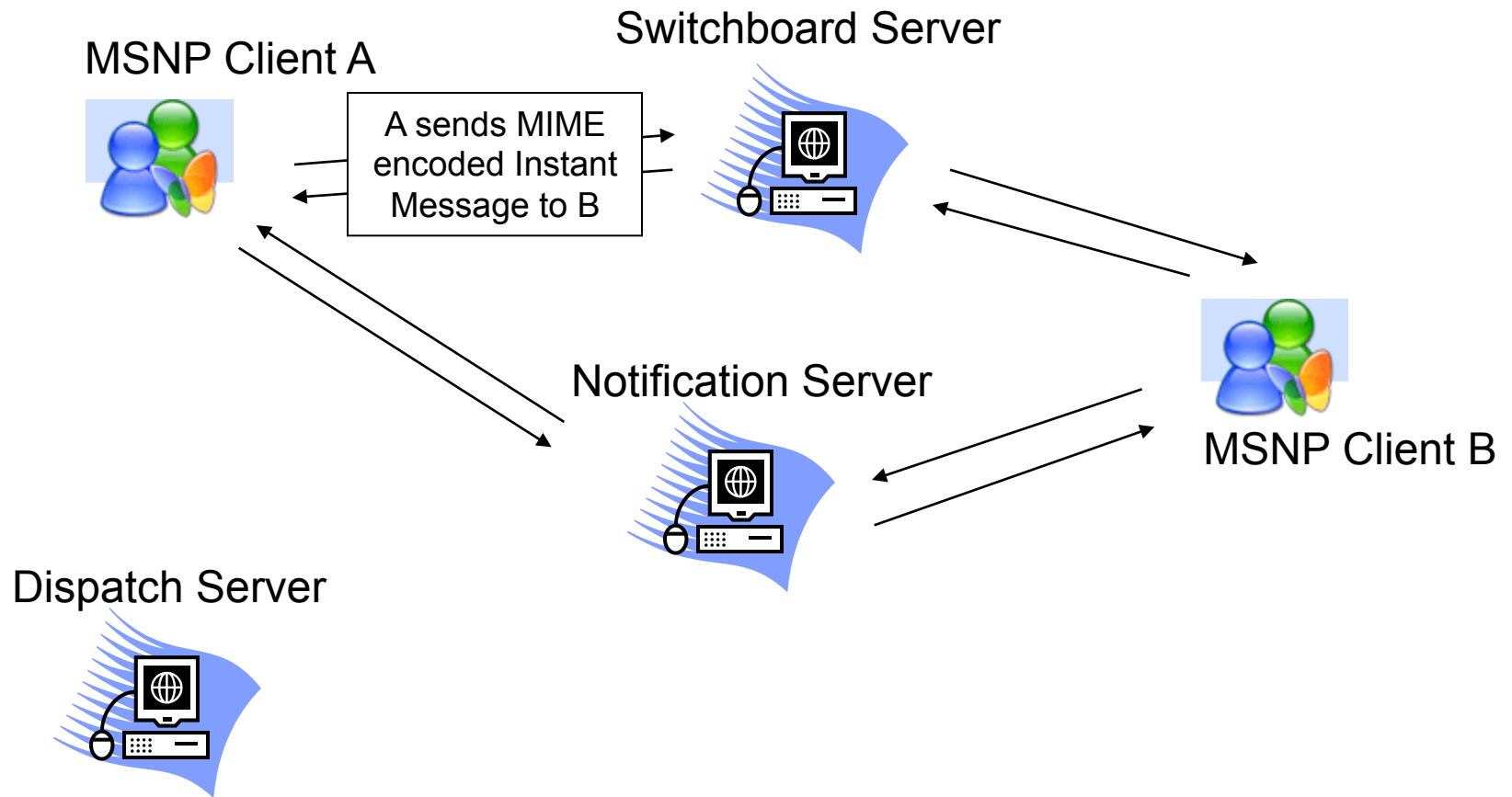
MSNP in action



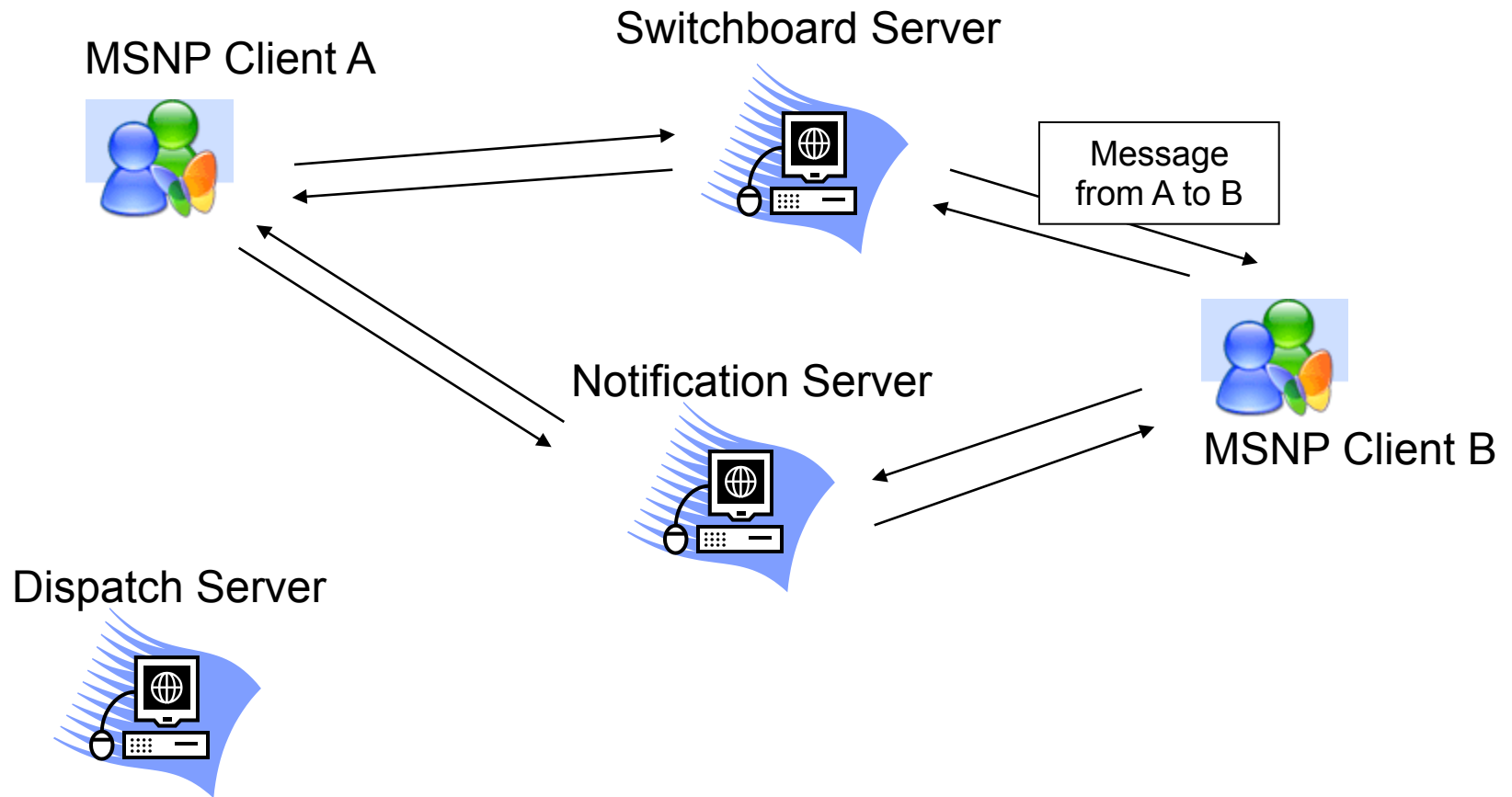
MSNP in action



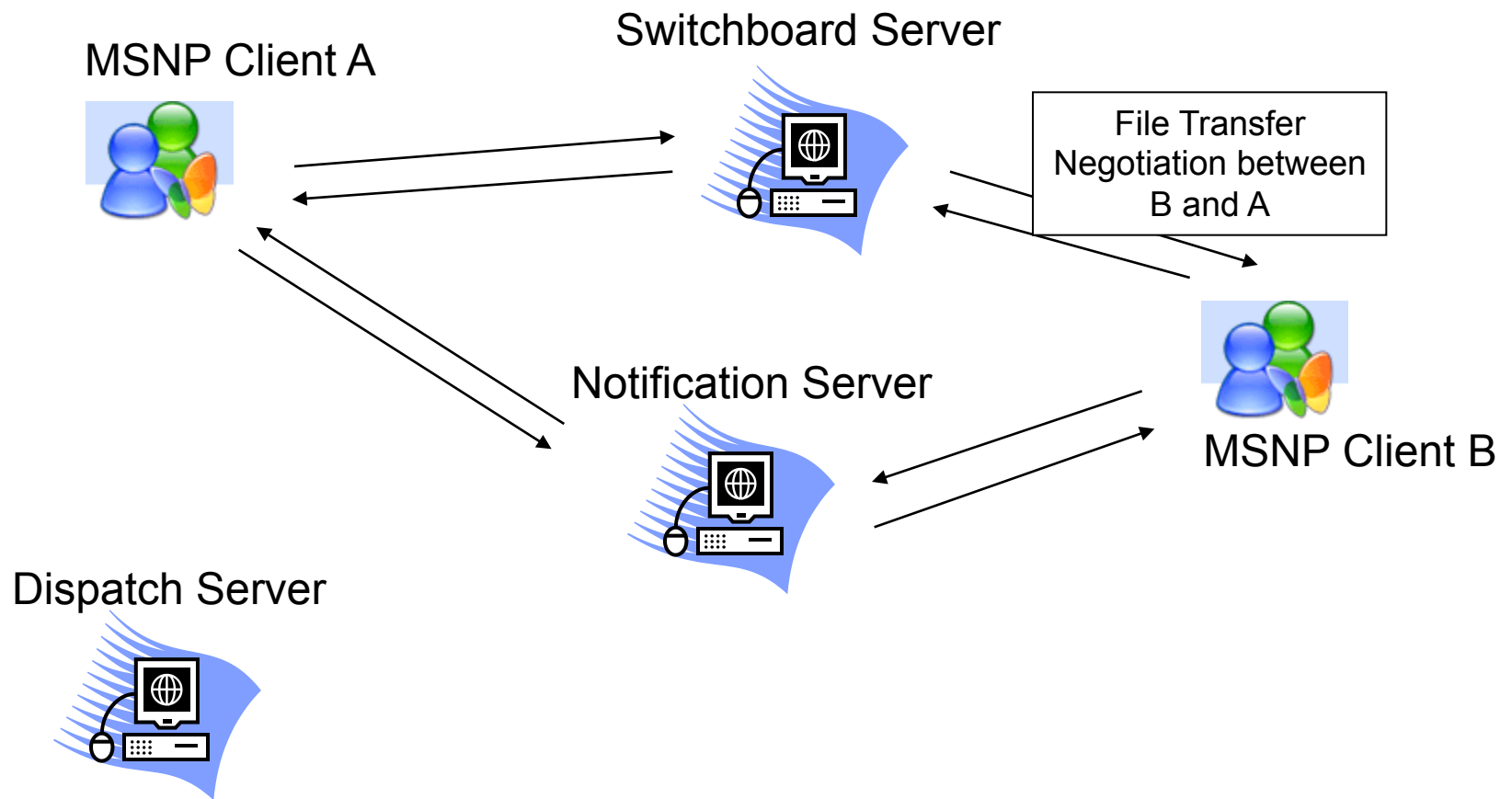
MSNP in action



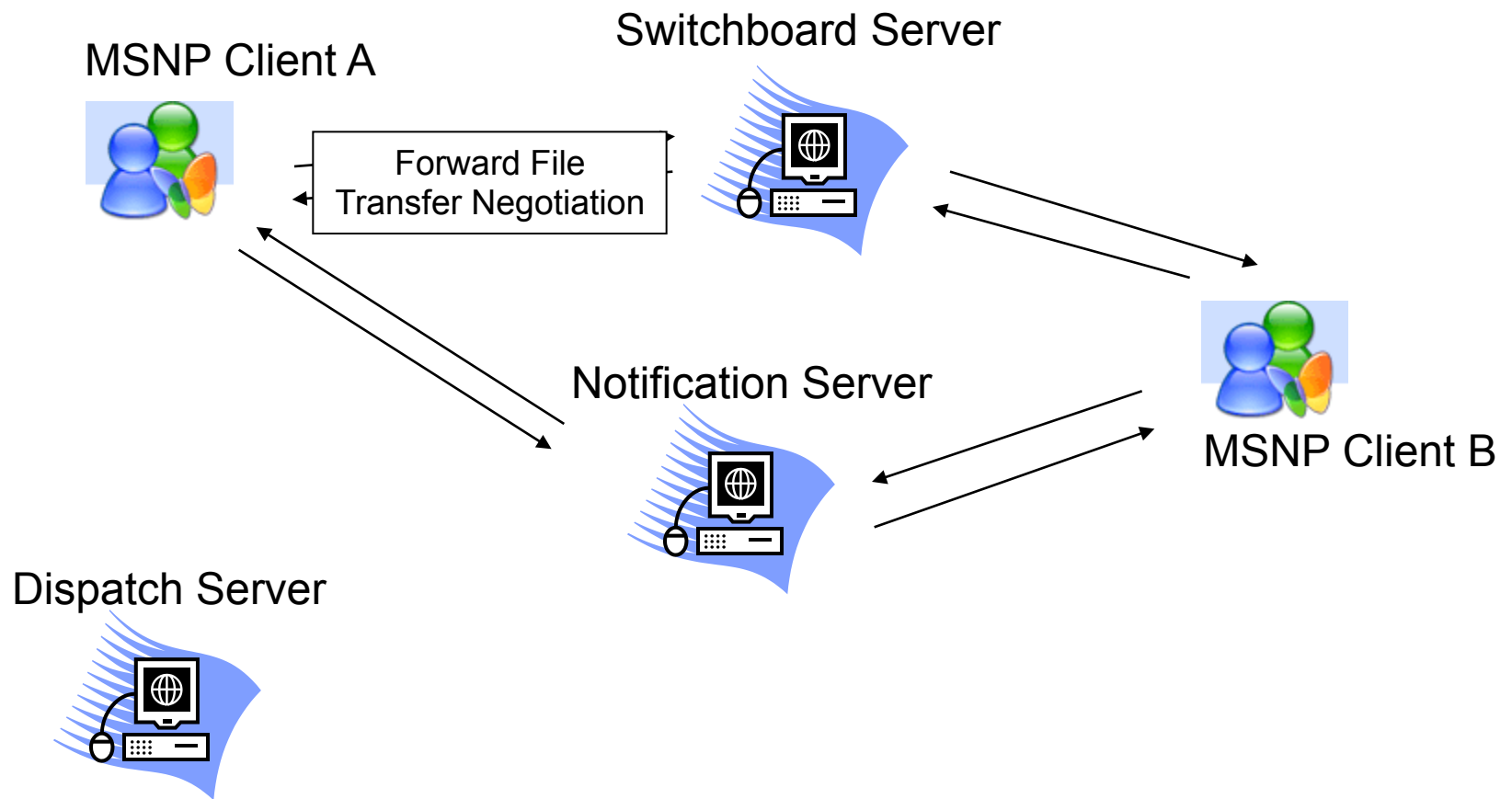
MSNP in action



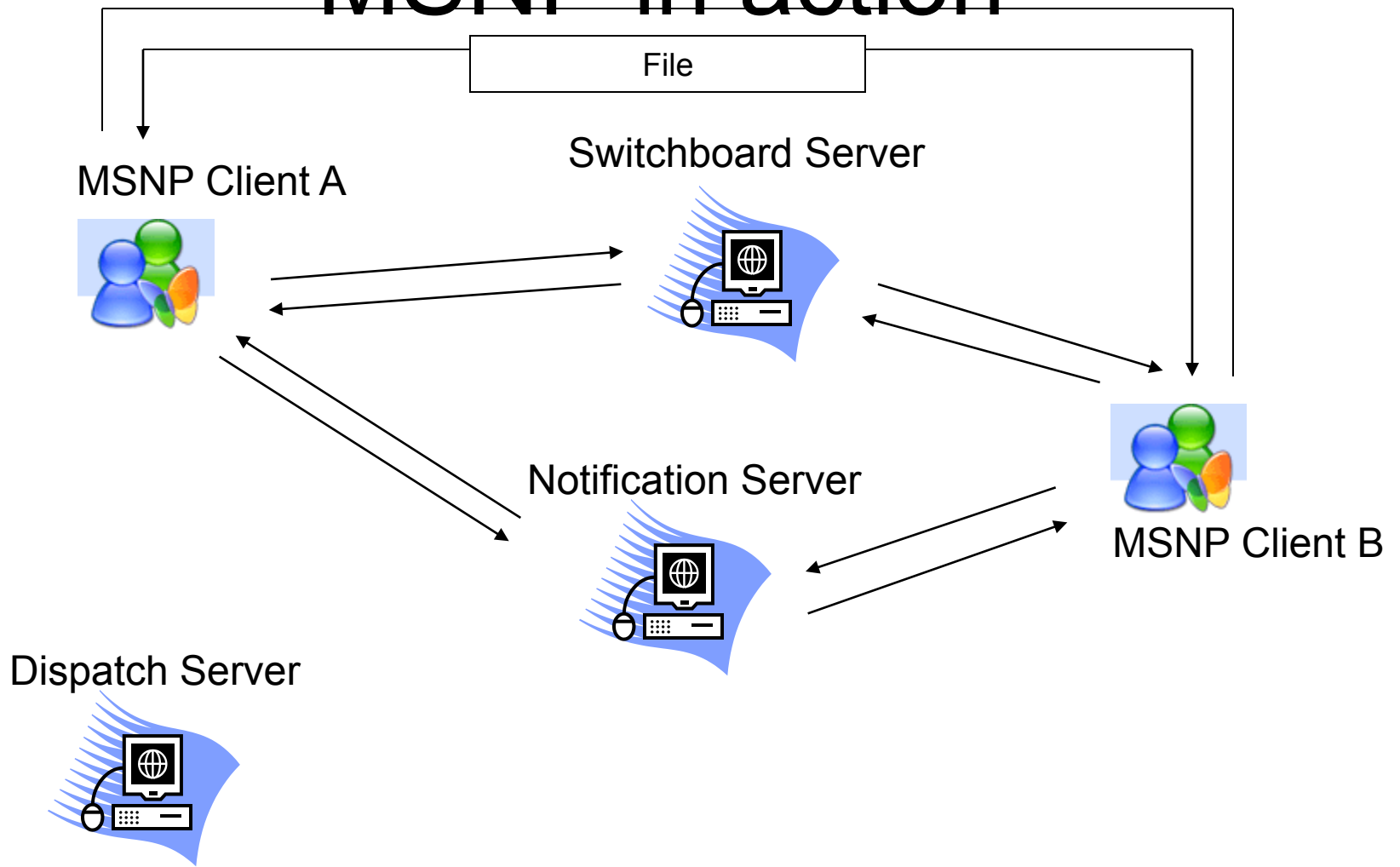
MSNP in action



MSNP in action



MSNP in action



Sending a message

Client A was invited to connect to switch board. It connected on port 1863 and provided authentication string and session id.

Server informs Client A that Client B is already at this session id

Client A send B a message. Requesting the reception to be acknowledged.

```
C: ANS 1 clientA@hotmail.com 849102291.520491113 11752013\r\n
S: IRO 1 1 2 clientB@passport.com Client B\r\n
S: ANS 1 OK\r\n
C: MSG 4 N 133\r\n
  MIME-Version: 1.0\r\n
  Content-Type: <attribute pairs>
  X-MMS-IM-Format: <attribute pairs>
  \r\n
  Hello! How are you?
C: ACK 4
```

ANS - accept a request from switchboard (c=>s)
IRO - provide roster (s=>c)

File transfer

Client A asks B to accept a file transfer, it does so by sending a message to the switchboard, which is forwarded to B.

Filename and size

```
MSG clientA@passport.com clientA 277\r\n
MIME-Version: 1.0\r\n
Content-Type: text/x-msmsgsinvite; charset=UTF-8\r\n \r\n
Application-Name: File Transfer\r\n
Application-GUID: {5D3E02AB-6190-11d3-BBBB-00C04F795683}\r\n
Invitation-Command: INVITE\r\n
Invitation-Cookie: 135395\r\n
Application-File: turtle.txt\r\n
Application-FileSize: 2341\r\n \r\n
```

Client B accepts (omited). Client A responds.

```
<partial fragment of message>
MSG clientA@passport.com clientA 244\r\n
MIME-Version: 1.0\r\n
Content-Type: text/x-msmsgsinvite; charset=UTF-8\r\n \r\n
Invitation-Command: ACCEPT\r\n
Invitation-Cookie: 135395\r\n
IP-Address: 203.121.147.134\r\n Port: 6891\r\n
AuthCookie: 1639797\r\n Launch-Application: FALSE\r\n Request-Data: IP-Address:\r\n \r\n
```

ClientA provides an IP and port for B to use.