Claims

1. An information transmission method comprising:

detecting an information transmission request from an execution terminal,

establishing a communication connection between the execution terminal and a command terminal,

receiving multimedia information from the execution terminal, and

inserting the received multimedia information into an IM message~~.~~,

wherein establishing the communication connection between the execution terminal and the command terminal comprises:

sending secret key information associated with the command terminal to the execution terminal,

receiving a data packet from the execution terminal, wherein the data packet carries the secret key information or is encrypted using the secret key information,

verifying the data packet, and

sending a response data packet to the execution terminal,

and wherein the received multimedia information comprises encrypted information and the method comprises:

decrypting the received encrypted information using the secret key.

2. The method of claim 1, wherein ~~establishing the communication connection between the execution terminal and the command terminal~~ receiving the data packet from the execution terminal comprises:

~~sending secret key information to the execution terminal, enabling the execution terminal to send a first broadcast data packet to a LAN communication port, the first broadcast data packet carrying the secret key information and address information associated with the execution terminal,~~

listening to ~~the~~ a LAN communication port, and

receiving ~~the~~ a first broadcast data packet from the LAN communication port, wherein the first data packet carries the secret key information and address information associated with the execution terminal,

and wherein verifying the data packet comprises:

extracting the secret key information from the first broadcast data packet, and

verifying the extracted secret key information,

and wherein sending the response data packet to the execution terminal comprises:

sending a first response data packet to the execution terminal in accordance with the address information in the first broadcast data packet.

3. The method of claim 1, wherein ~~establishing the communication connection between the execution terminal and the command terminal~~ receiving the data packet from the execution terminal comprises:

~~sending secret key information to the execution terminal, enabling the execution terminal to encrypt a second broadcast data packet using the secret key information, the second broadcast data packet carrying address information associated with the execution terminal, and to send the second broadcast data packet to a LAN communication port,~~

listening to ~~the~~ a LAN communication port,

receiving ~~the encrypted~~ a second broadcast data packet from the LAN communication port, wherein the second broadcast data packet is encrypted by the execution terminal using the secret key information, and the second broadcast data packet carries address information associated with the execution terminal,

and wherein verifying the data packet comprises:

decrypting the encrypted second broadcast data packet using the secret key information,

and wherein sending the response data packet to the execution terminal comprises:

sending a second response data packet to the execution terminal in accordance with the address information associated with the execution terminal in the second broadcast data packet.

4. The method of claim 1, wherein establishing the communication connection between the execution terminal and the command terminal further comprises:

sending ~~secret key information and~~ address information associated with the command terminal to the execution terminal,

and wherein receiving the data packet from the execution terminal comprises:

receiving a first connection request data packet which is sent from the execution terminal~~, wherein the first connection request data packet is sent from the execution terminal~~ in accordance with the address information associated with the command terminal, and the first connection request data packet comprises the secret key information and address information associated with the execution terminal,

and wherein verifying the data packet comprises:

extracting the secret key information from the first connection request data packet, and

verifying the extracted secret key information,

and wherein sending the response data packet to the execution terminal comprises:

sending a first connection response data packet to the execution terminal in accordance with the address information associated with the execution terminal in the first connection request data packet.

5. The method of claim 1, wherein establishing the communication connection between the execution terminal and the command terminal further comprises:

sending ~~secret key information and~~ address information associated with the command terminal to the execution terminal,

and wherein receiving the data packet from the execution terminal comprises:

receiving a second connection request data packet which is sent from the execution terminal in accordance with the address information associated with the command terminal, wherein ~~enabling the execution terminal to encrypt a~~ the second connection request data packet is encrypted by the execution terminal using the secret key information~~;~~ and the second connection request data packet carries~~ying~~ address information associated with the execution terminal,

~~receiving the encrypted second connection request data packet, wherein the encrypted second connection request data packet is sent in accordance with the address information associated with the command terminal,~~

and wherein verifying the data packet comprises:

decrypting the encrypted second connection request data packet using the secret key information,

and wherein sending the response data packet to the execution terminal comprises:

sending a second connection response data packet to the execution terminal in accordance with the address information associated with the execution terminal in the second connection request data packet.

~~6. The method of claim 1, wherein the received multimedia information comprises encrypted information and the method comprises:~~

~~decrypting the received encrypted information.~~

~~7~~6. The method of claim 1, wherein the multimedia information is sent from the execution terminal based on TCP or HTTP protocol.

~~8~~7. The method of claim 1, wherein the multimedia information is recorded by the execution terminal, wherein the method comprises:

caching the received recorded multimedia information,

receiving notification that recording of the multimedia information is complete from the execution terminal, and

combining the cached multimedia information, thereby generating complete multimedia information, and

wherein inserting the received multimedia information into the IM message comprises inserting the complete multimedia information into the IM message.

~~9~~8. An information transmission method comprising:

sending an information transmission request to a command terminal into which an IM message is entered,

establishing a communication connection between an execution terminal and the command terminal,

recording multimedia information, and

sending the recorded multimedia information to the command terminal, enabling the command terminal to receive the recorded multimedia information and to insert the received recorded multimedia information into the IM message~~.~~,

wherein establishing the communication connection between the execution terminal and the command terminal comprises:

receiving secret key information associated with the command terminal,

sending a data packet to the command terminal, wherein the data packet carries the secret key information or is encrypted using the secret key information,

receiving a response data packet from the command terminal,

and wherein the method further comprises:

encrypting the recorded multimedia information using the secret key information,

and wherein sending the multimedia information to the command terminal comprises:

sending the encrypted multimedia information to the command terminal, enabling the command terminal to decrypt the encrypted multimedia information and to insert the decrypted multimedia information into the IM message.

~~10~~9. The method of claim 98, wherein ~~establishing the communication connection between the execution terminal and the command terminal~~ sending the data packet to the command terminal comprises:

~~receiving secret key information associated with the command terminal,~~

sending a first broadcast data packet to a LAN communication port, the first broadcast data packet carrying the secret key information associated with the command terminal and address information associated with the execution terminal, enabling the command terminal to receive the first broadcast data packet by listening to the LAN communication port, to extract the secret key information from the first broadcast data packet, and to verify the extracted secret key information,

and wherein receiving the response data packet from the command terminal comprises:

receiving a first response data packet from the command terminal, wherein the first response data packet is sent from the command terminal in accordance with the address information associated with the execution terminal.

10~~1~~. The method of claim 98, wherein ~~establishing the communication connection between the execution terminal and the command terminal~~ sending the data packet to the command terminal comprises:

~~receiving secret key information associated with the command terminal,~~

encrypting a second broadcast data packet using the secret key information associated with the command terminal, the second broadcast data packet carrying address information associated with the execution terminal, and

sending the encrypted second broadcast data packet to a LAN communication port, enabling the command terminal to receive the encrypted second broadcast data packet by listening to the LAN communication port and to decrypt the encrypted second broadcast data packet using the secret key information associated with the command terminal,

and wherein receiving the response data packet from the command terminal comprises:

receiving a second response data packet from the command terminal, wherein the second response data packet is sent from the command terminal in accordance with the address information associated with the execution terminal.

112. The method of claim 98, wherein establishing the communication connection between the execution terminal and the command terminal further comprises:

obtaining ~~secret key information associated with the command terminal and~~ address information associated with the command terminal,

and wherein sending the data packet to the command terminal comprises:

sending a first connection request data packet to the command terminal in accordance with the address information associated with the command terminal, the first connection request data packet comprising the secret key information associated with the command terminal and address information associated with the execution terminal, enabling the command terminal to extract the secret key information from the first connection request data packet and to verify the extracted secret key information,

and wherein receiving a response data packet from the command terminal comprises:

receiving a first connection response data packet from the command terminal, wherein the first connection response data packet is sent from the command terminal in accordance with the address information associated with the execution terminal in the first connection request data packet.

123. The method of claim 98, wherein establishing the communication connection between the execution terminal and the command terminal further comprises:

obtaining ~~secret key information associated with the command terminal and~~ address information associated with the command terminal,

and wherein sending the data packet to the command terminal comprises:

encrypting a second connection request data packet using the secret key information, the second connection request data packet carrying address information associated with the execution terminal, and

sending the encrypted second connection request data packet to the command terminal in accordance with the address information associated with the command terminal, enabling the command terminal to decrypt the encrypted second connection

request data packet using the secret key information associated with the command terminal,

and wherein receiving the response data packet from the command terminal comprises:

receiving a second connection response data packet from the command terminal, wherein the second connection response data packet is sent from the command terminal in accordance with the address information associated with the execution terminal in the second connection request data packet.

~~14. The method of claim 9, comprising:~~

~~encrypting the recorded multimedia information,~~

~~wherein sending the multimedia information to the command terminal comprises:~~

~~sending the encrypted multimedia information to the command terminal, enabling the command terminal to decrypt the encrypted multimedia information and to insert the decrypted multimedia information into the IM message.~~

135. The method of claim 98, wherein recording the multimedia information comprises recording the multimedia information in more than one multimedia information packet, and sending the multimedia information to the command terminal comprises sending the more than one multimedia information packet to the command terminal, enabling the command terminal to cache the more than one multimedia information packet, to combine the cached more than one multimedia packet to generate complete multimedia information, and to insert the complete multimedia information into the IM message.

146. The method of claim 98, wherein sending the multimedia information to the command terminal comprises sending the multimedia information to the command terminal based on TCP or HTTP protocol.

157. A command terminal comprising:

a connection establishing module that establishes a communication connection between the command terminal and an execution terminal, when the command terminal, into which an IM message is entered, detects an information transmission request from the execution terminal,

a transmission module that receives multimedia information obtained by and sent from the execution terminal, and

a processing module that inserts the multimedia information into the IM message.,

wherein the connection establishing module comprises:

a key sending unit that sends secret key information associated with the command terminal to the execution terminal,

a receiving unit that receives a data packet from the execution terminal, wherein the data packet carries the secret key information or is encrypted using the secret key information,

a verifying unit that verifies the data packet, and

a response sending unit that sends a response data packet to the execution terminal,

and wherein the received multimedia information comprises encrypted information and the transmission module comprises:

a decrypting unit that decrypts the received encrypted information using the secret key.

168. The command terminal according to claim 157, wherein the connection establishing module further comprises:

a listening unit that listens to a LAN communication port,

and wherein the receiving unit comprises a broadcast receiving unit that either receives from the execution terminal and via the LAN communication port a first broadcast data packet carrying secret key information associated with the command terminal and address information associated with the execution terminal or receives from the execution terminal and via the LAN communication port an encrypted second broadcast data packet carrying the address information associated with the execution terminal,

and wherein the verifying unit comprises a first processing unit that either extracts the secret key information associated with the command terminal from the first broadcast data packet and verifies the extracted secret key information or decrypts the encrypted second broadcast data packet by using the secret key information associated with the command terminal,

and wherein the response sending unit comprises a first connection establishing unit that either, after successful verification and by utilizing the address information associated with the execution terminal in the first broadcast data packet, returns a first

response data packet to the execution terminal and establishes the communication connection between the command terminal and the execution terminal or, after successful decryption and by utilizing the address information associated with the execution terminal in the second broadcast data packet, returns a second response data packet to the execution terminal and establishes the communication connection between the command terminal and the execution terminal.

179. The command terminal according to claim 157, wherein ~~the connection establishing module comprises:~~

the receiving unit comprises a connection request receiving unit that either receives from the execution terminal a first connection request data packet carrying secret key information associated with the command terminal and address information associated with the execution terminal or receives from the execution terminal an encrypted second connection request data packet carrying the address information associated with the execution terminal,

the verifying unit comprises a second processing unit that either extracts the secret key information associated with the command terminal from the first connection request data packet and verifies the extracted secret key information or decrypts the encrypted second connection request data packet by using the secret key information associated with the command terminal, and

the response sending unit comprises a second connection establishing unit that either, after successful verification and by utilizing the address information associated with the execution terminal in the first connection request data packet, returns a first connection response data packet to the execution terminal and establishes the communication connection between the command terminal and the execution terminal or, after successful decryption and by utilizing the address information associated with the execution terminal in the second connection request data packet, returns a second connection response data packet to the execution terminal and establishes the communication connection between the command terminal and the execution terminal.

1820. The command terminal according to claim 157, wherein the transmission module comprises:

an information receiving unit that receives currently recorded and encrypted multimedia information from the execution terminal,

a the decrypting unit that uses secret key information associated with the command terminal to decrypt the currently recorded and encrypted multimedia information,

a caching unit that caches the decrypted multimedia information, and

a combining unit that, , upon receiving from the execution terminal a notification indicating that recording is complete, combines the cached multimedia information to generate complete multimedia information, and

wherein the processing module inserts the complete multimedia information into the IM message.

1921. An execution terminal comprising:

a request module that sends an information transmission request to a command terminal, into which an IM message is entered,

a connection establishing module that establishes a communication connection between the execution terminal and the command terminal,

a recording module that activates recording hardware to start recording multimedia information after the communication connection between the execution terminal and the command terminal is established, and

a transmission module that sends the multimedia information to the command terminal, enabling the command terminal to insert the multimedia information into the IM message.,

wherein the connection establishing module comprises:

a key receiving unit that receives secret key information associated with the command terminal,

a sending unit that sends a data packet to the command terminal, wherein the data packet carries the secret key information or is encrypted using the secret key information,

a response receiving unit that receives a response data packet from the command terminal,

and wherein the transmission module further comprises:

an encrypting unit that encrypts the recorded multimedia information using the secret key information,

and wherein the transmission module further sends the encrypted multimedia information to the command terminal, enabling the command terminal to decrypt the encrypted multimedia information and to insert the decrypted multimedia information into the IM message.

202. The execution terminal according to claim 2119, wherein ~~the connection establishing module comprises:~~

~~a first obtaining unit that obtains secret key information associated with the command terminal;~~

the sending unit comprises:

a first processing unit that either generates a first broadcast data packet carrying the secret key information associated with the command terminal and address information associated with the execution terminal or uses the secret key information associated with the command terminal to encrypt a second broadcast data packet carrying the address information associated with the execution terminal, and

a first sending unit that either sends the first broadcast data packet to a LAN communication port or sends the encrypted second broadcast data packet to the LAN communication port,

and wherein the response receiving unit comprises a first connection establishing unit that either receives a first response data packet from the command terminal, wherein the first response data packet is sent from the command terminal in response to the first broadcast data packet, and establishes the communication connection between the execution terminal and the command terminal or receives a second response data packet from the command terminal, wherein the second response data packet is sent from the command terminal in response to the encrypted second broadcast data packet, and establishes the communication connection between the execution terminal and the command terminal.

213. The execution terminal according to claim 1921, wherein the key receiving unit further ~~connection establishing module comprises:~~

~~a second obtaining unit that~~ obtains ~~secret key information and~~ address information associated with the command terminal,

the sending unit comprises:

a second processing unit that either generates a first connection request data packet carrying the secret key information associated with the command terminal and address information associated with the execution terminal or uses the secret key information associated with the command terminal to encrypt a second connection request data packet carrying the address information associated with the execution terminal, and

a second sending unit that either sends the first connection request data packet in accordance with the address information associated with the command terminal or sends the encrypted second connection request data packet in accordance with the address information associated with the command terminal,

and wherein the response receiving unit comprises:

a second connection establishing unit that either receives a first connection response data packet from the command terminal, wherein the first connection response data packet is sent from the command terminal in response to the first connection request data packet, and establishes the communication connection between the execution terminal and the command terminal, or receives a second connection response data packet from the command terminal, wherein the second connection response data packet is sent from the command terminal in response to the encrypted second connection request data packet, and establishes the communication connection between the execution terminal and the command terminal.

224. The execution terminal according to claim 1921, wherein the transmission module comprises:

an information obtaining unit that obtains multimedia information currently recorded by a recording device associated with the execution terminal,

~~an~~ the encrypting unit that uses secret key information associated with the command terminal to encrypt the currently recorded multimedia information,

an information transmitting unit that sends the encrypted multimedia information to the command terminal, enabling the command terminal to decrypt the encrypted multimedia information using the secret key information associated with the command terminal, and to cache the decrypted multimedia information, and

a notification unit that, upon determining that recording of the multimedia information is complete, sends a notification to the command terminal indicating that the recording has ended, enabling the command terminal to combine the cached multimedia information to generate complete multimedia information.