

```
1  Network Programing: {
2
3      Server Group: [
4
5          Nguyen Thi Ha Trang,
6          Duong Tuan Minh,
7          Tran Viet Hoang,
8          Tran Quy Duong
9
10     ]
11
12
13
14 }
```

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< Connect to other servers and
wait for request >

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clients and other servers >

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< Communicate with other
servers and clients >

}

```
1 01 {
```

```
2  
3  
4 [Initialization]
```

```
5     < Optionally connect to another server >
```

```
6  
7     < Connect to encryption server >
```

```
8  
9     < Connect to authentication server >
```

```
10  
11  
12 }  
13  
14
```

02 {

[Request handling]

< From clients >

< From encryption server >

< From authentication server >

}

```
1 Client ⇒ Server (Broadcast) {
```



```
4 |   < Broadcast to authenticated clients  
5 |   immediately without decrypting >
```

```
6 | }
```

```
7
```

```
8 Client ⇒ Server (Unicast) {
```



```
11 |   < Send the message to encryption server for decrypting >
```

```
12 | }
```

```
13
```

```
14
```

Encryption \Rightarrow Server {

< Response messages for out encrypt/decrypt request>

< Decrypt
Result> * Parse the raw message to JSON
 * Handle the message based on the method
 * Send results to client or auth server

< Encrypt
Result > * Encrypted messages are for clients
 * Send back message to the client

}

Authentication \Rightarrow Server: {

Authentication results for clients'
LOGIN or REGISTER requests

<p>

Results are sent to encryption server for
encrypting before transferring to clients

</p>

}

03 {

[Protocols]

< Server \iff Clients >

< Server \iff Encryption >

< Server \iff Authentication >

}

Server ↔ Client {

Encrypted messages

Broadcast

```
{  
  "method": "BROADCAST",  
  "message": "encrypted json"  
}
```

Unicast

```
{  
  "method": "UNICAST",  
  "message": "encrypted json"  
}
```

```
}
```

Server \iff Client {

Raw LOGIN request

Request (C \Rightarrow S)

```
{  
  "method": "LOGIN",  
  "username": "admin",  
  "password": "admin"  
}
```

Response (S \Rightarrow C)

```
{  
  "method": "LOGIN",  
  "status": "SUCCESS",  
  "username": "admin"  
}
```

}

Server \longleftrightarrow Client {

Raw MESSAGE request

Request (C \Rightarrow S)

```
{  
  "method": "MESSAGE",  
  "username": "admin",  
  "message": "random msg"  
}
```

Broadcast (S \Rightarrow Other Clients)

```
{  
  "method": "MESSAGE",  
  "username": "admin",  
  "message": "random msg"  
}
```

}

Server \iff Encryption {

Request to ENCRYPT a message

Request (S \Rightarrow E)

```
{  
  "receiver": 0,  
  "method": "ENCRYPT",  
  "message": "raw msg"  
}
```

Response (E \Rightarrow S)

```
{  
  "receiver": 0,  
  "method": "ENCRYPT",  
  "message": "encrypted msg"  
}
```

```
}
```

Server \iff Encryption {

Request to DECRYPT a message

Request (S \Rightarrow E)

```
{  
  "receiver": 0,  
  "method": "DECRYPT",  
  "message": "encrypted msg"  
}
```

Response (E \Rightarrow S)

```
{  
  "receiver": 0,  
  "method": "DECRYPT",  
  "message": "raw msg"  
}
```

}

Server \iff Authentication {

Handle a client's LOGIN request

Request (S \Rightarrow A)

```
{  
  "receiver": 1,  
  "method": "LOGIN",  
  "username": "admin",  
  "password": "admin"  
}
```

Response (A \Rightarrow S)

```
{  
  "receiver": 1,  
  "method": "LOGIN",  
  "status": "SUCCESS",  
  "username": "admin"  
}
```

```
}
```

Server \iff Authentication {

Handle a client's REGISTER request

Request (S \Rightarrow A)

```
{  
  "receiver": 1,  
  "method": "REGISTER",  
  "username": "admin",  
  "password": "admin",  
}
```

Response (A \Rightarrow S)

```
{  
  "receiver": 1,  
  "method": "REGISTER",  
  "status": "FAIL",  
  "error": "Error msg"  
}
```

```
}
```

1 Thanks; {
2

3 'Do you have any questions?'
4
5
6



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