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SHOW CHAIN

点对点连接协议

NAT类型：

- T1 全锥形
- T2 受限锥形
- T3 端口受限锥形
- T4 对称形

1. UDP Keep Alive

点对点udp连接建立后，心跳包请求

Request:

```
{  
  'op_code': 0x100,  
  'id': $USER_ID,  
  'seq': 0,  
  'ts': 0  
}
```

2. UDP Connect (Direct) : Tn —> T1

点对点udp直连请求 & 响应

Request:

```
{
  'op_code' : 0x101,
  'id' : $USER_ID,
  'target' : $TARGET_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'sign' : [op_code, target, seq, ts] RSA Signature
}
```

Response:

```
{
  'op_code' : 0x102,
  'id' : $USER_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'sign' : [op_code, id, seq, ts] RSA Signature
}
```

3. UDP Connect (through NAT) : $T_n \rightarrow T_1 \rightarrow T(1-3)$

Request:

```
{
  'op_code' : 0x111,
  'target' : $TARGET_ID,
  'id' : $USER_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'sign' : [op_code, target, seq, ts] RSA Signature
}
```

Pass Request:

```
{
  'op_code' : 0x112,
  'target' : $TARGET_ID,
  'id' : $USER_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'ip' : $REQUEST_IP,
  'port' : $REQUEST_PORT,
  'session' : $T1_GENERATE,
  'sign' : $sign
}
```

Response(if target has same ip with requester) :

```
{
  'op_code' : 0x113,
  'target' : $TARGET_ID,
  'id' : $USER_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'sign' : [op_code, target, id, seq, ts] RSA Signature
}
```

Response ACK :

```
{
  'op_code' : 0x114,
  'id' : $USER_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'session' : $T1_GENERATE,
  'sign' : [op_code, session, seq, ts] RSA Signature
}
```

Pass Response ACK :

```
{
  'op_code' : 0x115,
  'id' : $USER_ID,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'ip' : $REQUEST_IP,
  'port' : $REQUEST_PORT,
  'session' : $T1_GENERATE,
  'sign' : $sign
}
```

4. UDP Connect (proxy) : Tn —> T1 —> Tn

Request :

```
{  
  'op_code' : 0x121,  
  'target' : $TARGET_ID,  
  'id' : $USER_ID,  
  'seq' : $CLIENT_PACKET_SEQUENCE,  
  'ts' : $CLIENT_TIMESTAMP,  
  'sign' : [op_code, target, seq, ts] RSA Signature  
}
```

Response :

```
{  
  'op_code' : 0x122,  
  'session' : $PROXY_GENERATE,  
  'target' : $TARGET_ID,  
  'seq' : $CLIENT_PACKET_SEQUENCE,  
  'ts' : $CLIENT_TIMESTAMP,  
  'sign' : [op_code, target, session, seq, ts] RSA Signature  
}
```

5. UDP Send data (proxy) : Tn —> T1 —> Tn

Request :

```
{
  'op_code' : 0x123,
  'target' : $TARGET_ID,
  'id' : $USER_ID,
  'data' : $DATA,
  'session' : $PROXY_GENERATE,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP,
  'sign' : [op_code, target, session, seq, ts] RSA Signature
}
```

Pass Request:

```
{
  'op_code' : 0x124,
  'target' : $TARGET_ID,
  'id' : $USER_ID,
  'data' : $DATA,
  'session' : $PROXY_GENERATE,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP
}
```

Response ACK :

```
{
  'op_code' : 0x125,
  'session' : $PROXY_GENERATE,
  'seq' : $CLIENT_PACKET_SEQUENCE,
  'ts' : $CLIENT_TIMESTAMP
}
```