

## 5 - 2 P2P Implement of Power Supply Controller for HIRFL-CSR

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In order to solve the communications blockage problem of the power supply controller in Lanzhou Heavy Ion Accelerator CSR, a PAC is designed for power controller by using the structure of FPGA + ARM. ARM is designed as the core processor, and FPGA is designed for power digital adjust algorithm. P2P technology is embedded to the core processor ARM of the PAC. The technology of UDP holing is adopted. The schematic diagram of UDP Holing is shown in Fig. 1. A direct communication connect is established between the controllers using UDP holing, so the data no longer forwarded by the main Oracle database system acting as a server.

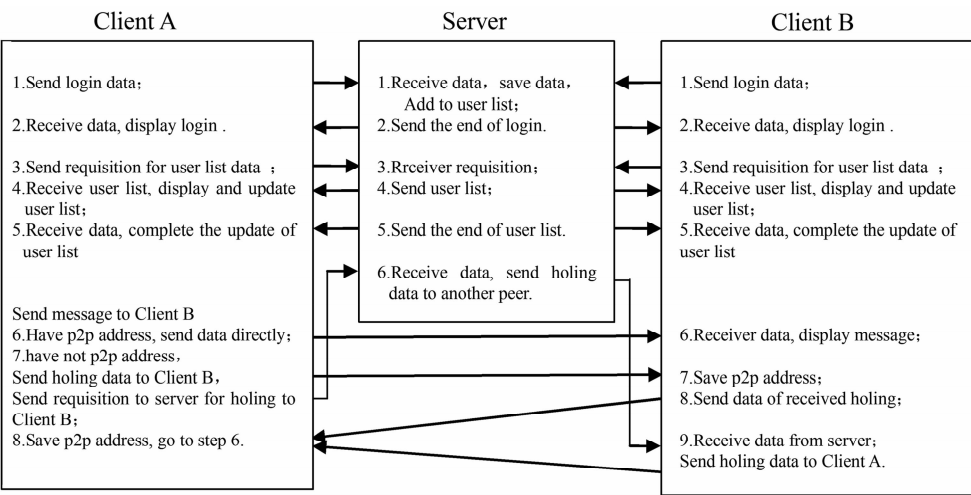


Fig. 1 Schematic diagram of UDP Holing.

A test is conducted between P2P mode and Client/Server mode. A file which size is 1 MB is delivered using the two modes, The result of P2P mode and Client/Server mode is shown in Table 1. The result shown that P2P method decentralized the communication responsibility of Oracle database system, the risk of network block is reduced, and the effectiveness and reliability of communication is improved.

Table 1 Result of two modes

Number	Times of C/S mode(s)	Times of P2P mode(s)
1	1. 67	0. 71
2	1. 66	0. 75
3	1. 58	0. 78
4	1. 59	0. 73
5	1. 60	0. 73
Mean	1. 62	0. 74

### References

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