

### 8 - 47 Application of Virtual AP Technology in HIRFL

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The demand for data asset security has expanded in line with the fast growth of network technologies. Implementing security isolation between internal and external networks can increase the network’s capacity to resist assaults and its overall security level. In order to address the security threats and resource allocation issues caused by the integration of internal and external networks for HIRFL wireless network, we implemented a virtual AP (Access Points) solution in CSRe to achieve security isolation of a single AP’s internal and external networks.

As demonstrated in Fig.1, it can be virtualized one AP into two devices and set up two networks, HIRFL\_WIFI and IMP\_WIFI, by utilizing virtual AP technology. The HIRFL\_WIFI service, in particular, accesses the accelerator control network, monitors the operating state, and debugs each device. Users can use IMP\_WIFI to query the Internet and have real-time technical conversations with colleagues. To minimize resource conflicts when using the two networks, we employ double network ports and dual wireless controllers to complete the separation of internal and external network data. Lastly, develop corresponding service and authentication procedures based on diverse user groups and enterprises.

The wireless access point deployed this time uses the most recent Wi-Fi 6 technology, which enables simultaneous 2.4 and 5 GHz connectivity, and has a maximum access rate of 5.375 Gbps. Figure2 describes the traffic numbers during equipment maintenance in August 2022. In that month, the uplink traffic was 103.23 GB.

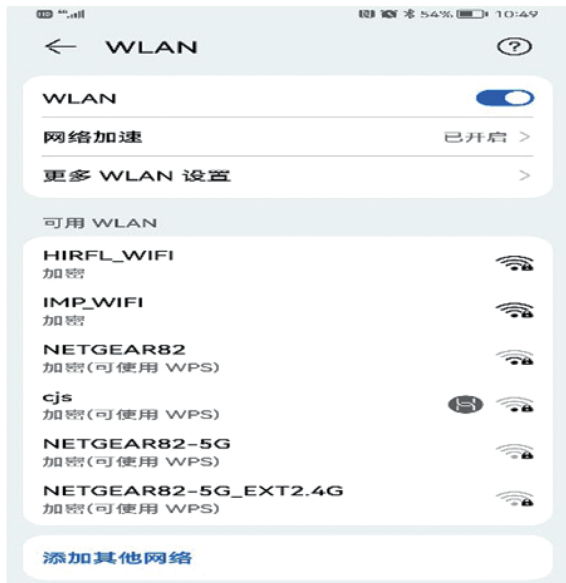


Fig. 1 (color online) WIFI instance of internal and external network on CSRe.

报告概述	生成日期	下行总流量	上行总流量	带宽平均使用率	最大在线用户数	最大会话数	操作
日报表	2023-02-27	2.28GB	1.49GB	下行:206.49Mbps(0.02%) 上行:134.45Mbps(0.01%)	10	171	查看详情
相比上一周期日报表	2023-02-26	17.13MB <b>+13290.12%</b>	203.67MB <b>+630.07%</b>	下行:1.55Mbps(0%) 上行:18.42Mbps(0%)	5 <b>+66.67%</b>	40 <b>+327.5%</b>	详细对比
周报表	2023-02-27	2.79GB	4.51GB	下行:35.08Mbps(0%) 上行:52.21Mbps(0.01%)	9	143	查看详情
相比上一周期周报表	2023-02-20	2.66GB <b>+5.19%</b>	3.79GB <b>+36.92%</b>	下行:34.31Mbps(0%) 上行:42.51Mbps(0%)	12 <b>-25%</b>	232 <b>-38.36%</b>	详细对比
月报表	2022-06	28.68GB	103.23GB	下行:65.43Mbps(0.01%) 上行:311.16Mbps(0.03%)	5	413	查看详情
相比上一周期月报表	2022-05	12.46GB <b>+130.22%</b>	3.61GB <b>+2762.39%</b>	下行:37.54Mbps(0%) 上行:10.87Mbps(0%)	7 <b>-14.29%</b>	147 <b>+180.95%</b>	详细对比

Fig. 2 (color online) HIRFL wireless traffic statistics.

The use of virtual AP technology can realize multiple sets of isolated wireless network environments without additional investment in APs, and reduce the cost of deploying wireless networks on HIRFL. In the future, we will monitor the stability of the network for a long time and solve network problems in a timely manner.