5 - 27 Construction of Wireless Network in IMP

Wang Yongping, Yue Min, Gou Shizhe and Ma Yuan

In order to meet the requirements of information communication and retrieval for IMP scientific research personnel, we have built IMP wireless network. The wireless network covers all office building and laboratory building. There is high-density wireless network coverage in important areas such as meeting rooms, academic lecture hall and central control room, which is convenient for delegates and scientific research personnel accessing network using mobile phone, ipad, or laptop.

A multi-service wireless controller is adopted as the core of wireless network. The access points use new generation of terminal sensing type intelligent high-speed wireless AP. And the AP is powered by POE switch to achieve the intelligent wireless service awareness and meticulous user control and management. The AP can be managed efficiently by network manager through the integration management platform. Through the integration of topology and unified management of users, resources, services, network equipment failure and user fault can be accurately located.

Fig. 1 shows interface of wireless network user management. Fig. 2 is the interface of AP management. We can see the distribution and online/offline state of all AP from Fig. 2.

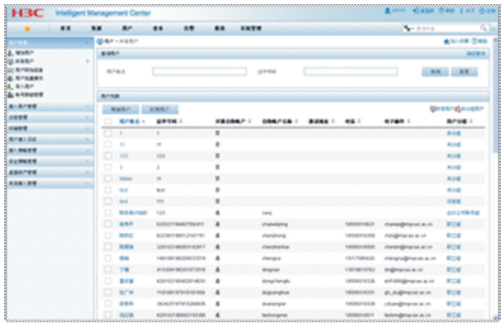

Fig. 1 (color online) Interface of wireless network user management.

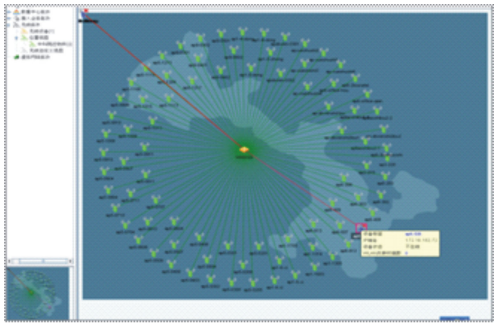

Fig. 2 (color online) Interface of AP management.

Up to now, the wireless network has hundreds of users. In academic lecture hall, it can support 150 people using the wireless network at the same time. And it has provided wireless network service for "HIF2014 International Conference" and "The 4th International Conference on Nuclear Reaction Dynamics of Heavy Ion Collision".

5 - 28 Interlock of Vacuum Devices in SSC-Linac

Liu Xiaojun, Zhang Wei, Gu Kewei, An Shi, Chang Jianjun and Wang Pengpeng

The architecture of SSC-Linac vacuum control system is based on EPICS. The interlock of vacuum devices in SSC-Linac was introduced. We use C-RIO as an EPICS IOC to acquire data from vacuum gauges and control vacuum valves. The software is programmed by Labview.

The interlock of vacuum devices is very important for the whole system. If the pressure of the vacuum gauge is larger than the value we preset, the vacuum valve will be pushed in automatically and it can't be operated. If the pressure is smaller than the present value, we can operate the vacuum valve to be in or to be out[1].

Vacuum components and control architecture

The interlock mainly occurred between vacuum gauge and vacuum valve. The interface of the vacuum gauge is serial port RS-232 and vacuum valve is digital input and digital output. Both of these two kinds of devices are connected to C-RIO modules. The C-RIO generates PVs (Process Variable) and gives them to top layer which we designed with CSS (Control System Studio). The control architecture is shown in Fig. 1. The interlock logic is designed in CRIO based on Labview.

Vacuum interlock

The vacuum pressure data is acquired through RS-232 passively. We should send a command whose format is string to vacuum gauge and it will return the vacuum pressure value. If the value is larger than we preset, the C-RIO digital output module can generate a 5 volt electrical level to push the vacuum valve in. In that case, we

cannot operate the device manually. On the contrary, the vacuum valve can be operated. The status of vacuum valve is return by digital input interface and will display in CSS interface. The schematic is shown in Fig. 2.

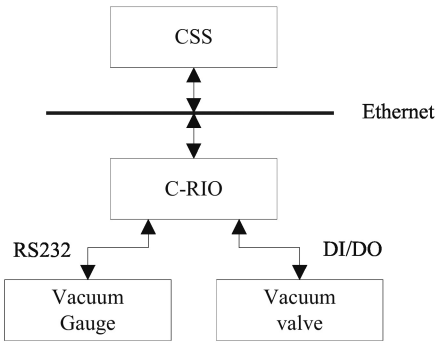

Fig. 1 The Control Architecture.

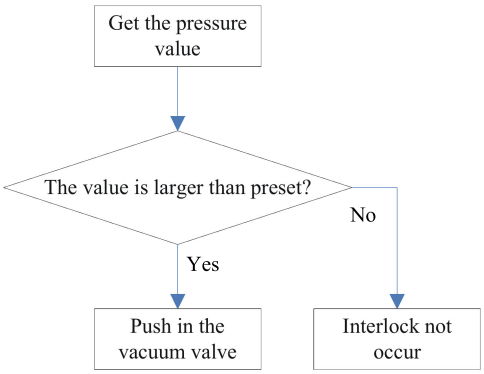

Fig. 2 Interlock schematic.

The interlock in SSC-Linac vacuum devices worked stably and it protect the machine from damage. This interlock is a little part in the whole control system and we will complete other interlocks soon.

Reference

[1] S. Kato, K. Kanazawa, Y. Suetsugu, Applied Surface Science, 169-170(2001)732.

5 - 29 Establishment of HIRFL Control Network Monitoring Platform

Yue Min, Gou Shizhe, Wang Yongping and Ma Yuan

There are a lot of equipments in HIRFL such as faraday cups, view screens power supplies, RF (radio frequency) equipment, vacuum equipment, and so on. A growing number of equipment support network interface in these years. Thus the control network system of HIRFL has become more and more big and complicated. So it is very important to ensure that each device is online. We built a network monitoring platform. There are three functions. The first is monitoring the online or offline state of each switch. Second, the devices in the control network belong to different subsystem and are managed by subsystem managers. We cannot guarantee that each device is not dropped, but we can have a warning system which can warn device manager once the device dropped. Third, if some ports are abnormal, the information can be immediately reported to the administrator. Therefore, the control network monitoring platform has three subsystems, switch monitoring system, equipment offline warning system and switch log analysis system, as shown in Fig. 1.

We have finished the switch monitoring system using asp.net and flash technology. The monitor system displays the network topology and the online/offline state of all switches. Refreshed every 20 s, it ensures the effectiveness of the state. The link monitoring diagram is shown in Fig. 2. The green line means the link from switch A to switch B is ok. In contrast, the red line means the link fails.

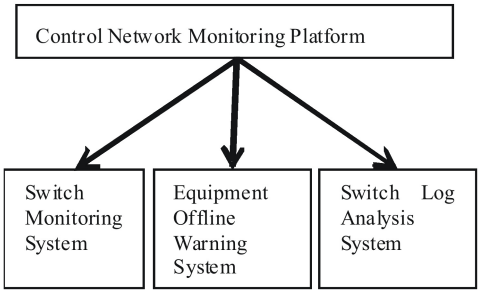

Fig. 1 Network monitoring platform structure.

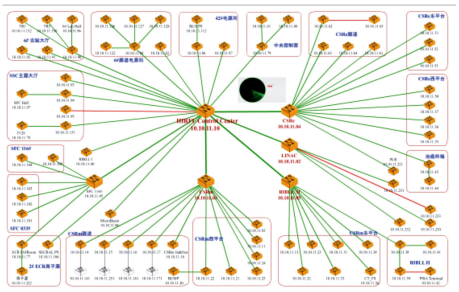

Fig. 2 (color online) Link monitoring diagram.

We also set up equipment offline warning system which shows warning information when any equipment is offline. At present, the alarm message is presented to the user in table. So it requires the user to take the initiative to go