

## 8 - 46 Improvement of Timing Network Monitoring System

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High Intensity heavy-ion Accelerator Facility (HIAF) synchronous timing system adopts WR technology to achieve sub-nanosecond synchronous timing accuracy, the construction of the system requires several switches and nodes, whether these devices work normally or not is related to the accuracy of the synchronous timing system. Therefore, it is necessary to build a monitoring system to monitor the operation of the equipment. After investigation, it is decided to use the Zabbix+Grafana solution to monitor the synchronous timing system.

We fill the mib values of the WR Switch parameters into the monitoring items of Zabbix, which obtain the WRS data through the SNMP protocol, the data obtained is shown in Fig. 1.

10.10.3.141	wrsBootConfigStatus	52s	1
10.10.3.141	wrsBootHwinfoReadout	52s	1
10.10.3.141	wrsBootLoadFPGA	52s	1
10.10.3.141	wrsBootLoadLM32	52s	1
10.10.3.141	wrsBootSuccessful	52s	1
10.10.3.141	wrsCpuLoadHigh	52s	1
10.10.3.141	wrsDateTAIString	52s	2022-0
10.10.3.141	wrsDiskSpaceLow	52s	1
10.10.3.141	wrsEndpointStatus	52s	1
10.10.3.141	wrsMainSystemStatus	52s	2
10.10.3.141	wrsMemoryFreeLow	52s	1

Fig. 1 (color online) Parameters of WRSwitch.



Fig. 2 (color online) WeChat alarm information.

We set the threshold for some important parameters. When they exceed the threshold, we set the WeChat alarm and email alarm and send them to the person in charge of the equipment, WeChat alarm information is shown in Fig. 2.

The above work is carried out in Zabbix. Data display works are finished in Grafana. Grafana displays normal operation data, log information, alarm information, etc., The alarm information is shown in Fig. 3.

Host	Severity	Status	Problem	Ack	Tags	Time
10.10.3.152	Average	PROBLEM	Physical memory: High memc		class: network	16 Feb
10.10.3.152	Average	PROBLEM	Interface wri11(): Link down		class: network	16 Feb
10.10.3.152	Average	PROBLEM	Interface wri9(): Link down		class: network	16 Feb
10.10.3.152	Average	PROBLEM	Interface wri7(): Link down		class: network	16 Feb
10.10.3.152	Average	PROBLEM	Interface wri4(): Link down		class: network	16 Feb

Fig. 3 (color online) Display of alarm information in Grafana.

We have made full use of the advantages of Zabbix and Grafana, as well as other software to meet the requirements of monitoring system of the timing system for applicability and aesthetics. We will continue to do other work to improve monitoring system of the timing system.