The Study of BES Online System

- Running status report in recent years
- The current problem of online system
- How to reduce the online system crash during BES data taking
- The requirements of man powers and budget

Running status

- Repeator
  - VME system cannot running during 99's spring festival holidays
  - replace a chip in repeater board
- VCBD
  - Trigger system sent the "addition" instruction before it received the reset signal from online
  - VCBD sent a wrong "multiple" instruction

- VME
  - After trigger reset, VME system crashed due to can not get LUM buffer in time
  - The problem was caused by defection of LUM detector
  - added a “waiting timeout” option into VME code, restarted DAQ if the “interrupt vector” was not released in 10 second
- Alpha
  - DAQ system hung while write “command” from ALPHA to VME site via socket
  - The solution is in progressed

- The extranoes high bit one
  - In MDC_Q, TOF and maybe other system data, the extraneos high bit “1” was found in the Tag (address) value
  - Using 2 (VCBD) buffer instead of 4 buffer, the problem was temporarily resolved
  - The extranoes high bit “1” disappeared while slowing down the memory copy which was across the repeator.
  - The “wrong TAG” in VC system was resolved by replacing a 1879 TDC

The Current Problem in Online System

- The aging problem
  - Most of DAQ crashes were caused by defection of hardware(detector & electronics). It's the general problem of all BES system.
- Network problem
  - Network was not stable recently, made system crash, especially for Alpha machine

- Problem in Online System
  - VME was connected to front-end electronics system through VCBD, It's really a "black box" to online system now. In other word,
  - Much powerful tools were needed to test front-end system. It would be helpful to diagnose the fault source, and to resolve the problems *as soon as possible*
  - The capability is not strong enough to deal with the system crash caused by hardware defection

What we can do now?

- VCBD
  - Test is just in Memory level only
- CAMAC
  - Verify the CAMAC crate in simple way
- VCBD Test Station
  - Setting up by electronics division

How to reduce the Online crash

- Setup a completely test system in 2000
  - Diagnose front-end system in “interrupt” level
  - Check VCBD board much carefully
- Upgrade network of online system during the summer holidays
  - Improve the network security
  - Improve the reliable of network connection

- Development of Online software
  - Improve the capability of VME system to handle the hardware defection
  - Resolve the online crash problem during the BES data taking in time, reduce the possibility of system crash
  - It is a long period, step by step procedure for development of the online software, especially for VME system
  - Add some online histograms, to diagnose the fatal fault from front-end system

Man power and Budget

- Man power
  - Jiawen Zhang, Kanglin He, Bingyun Zhang etc. 2-3 Months /(Year)/(Man power) or more
- Budget
  - Network upgrade: 150K-200K RMB
  - Others: 20K - 30K RMB per Year