

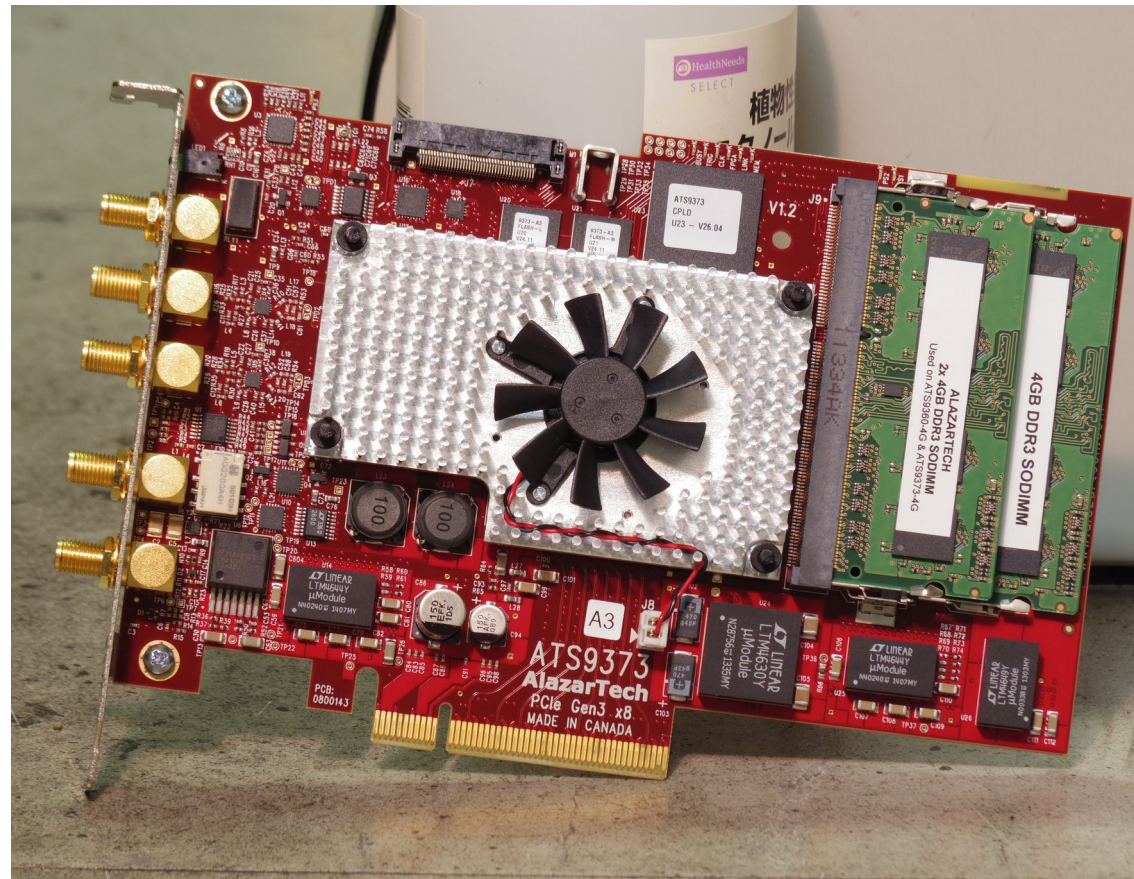
ADC -> Ethernet

07-Jul-2015

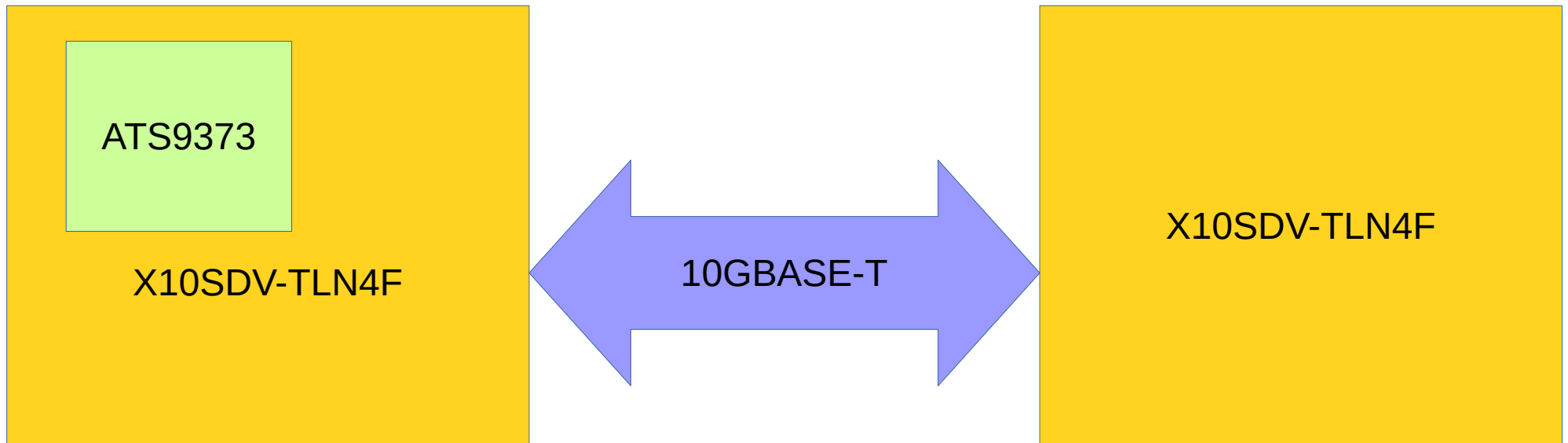
泊久信

Setup

- ADC: AlazarTech ATS9373
- M/B: Supermicro X10SDV-TLN4F
 - CPU: Xeon D-1540



Setup Diagram



Software Environment

- CentOS 6.6
- Language: C++14
 - Compiler: GCC 5.1
 - Additional library: Boost 1.58.0
- ATS-SDK 5.9.26-1

main function

```
auto loops=0UL;
auto adcboard=AlazarAcqAgent::AdcBoard(sysid,boardid);
adcboard.initialize();

boost::asio::io_service iosvc;
auto sink=AlazarAcqAgent::TcpSink<unsigned short>(iosvc,desthost,destport);

adcboard.acquire([&](auto data, auto report_fin) -> bool {
    sink.sendbuf(data,report_fin);
    return (loops++<1024UL);
});
```

ADC initialization

- similar to setting up DSO

```
void AdcBoard::setInputControl() {  
    if(ApiSuccess!=AlazarInputControl(  
        boardHandle,  
        CHANNEL_A,  
        DC_COUPLING,  
        INPUT_RANGE_PM_2_V,  
        IMPEDANCE_50_OHM)) {  
        throw std::runtime_error("Alazar ADC Channel A initialization failed");  
    }  
    if(ApiSuccess!=AlazarInputControl(  
        boardHandle,  
        CHANNEL_B,  
        DC_COUPLING,  
        INPUT_RANGE_PM_2_V,  
        IMPEDANCE_50_OHM)) {  
        throw std::runtime_error("Alazar ADC Channel B initialization failed");  
    }  
}
```

acquisition loop

```
auto run_again=false;
auto buf_Completed=0L;
auto timeout_ms=5000;
auto t1=std::chrono::high_resolution_clock::now();
do {
    auto buf_Index=buf_Completed%bufferArray.size();
    auto buf_next=bufferArray[buf_Index];

    waitBuffer(buf_next,timeout_ms);
    buf_Completed++;
    run_again=postproc(buf_next,
                       [this,buf_next]() { postAsyncBuffer(buf_next) })
} while(run_again);
auto t2=std::chrono::high_resolution_clock::now();
```

Performance (as of now)

- TCP: 409.297 ~ 800.162 Mbytes/s
- Need to tune ADC initialization parameters
 - Acquisition freq.
 - Triggering timeout