

# The Benefits of a 64bit/66MHz Capture Card

## Summary

Many analyzer vendors are claiming gigabit performance. Take a close look at the specifications for their gigabit capture cards to see if the claims hold water: A 32MHz card running at 33MHz simply cannot process the packets quickly enough. Network Instruments Gigabit Observer capture card processes 64 bits per cycle at 66MHz, ensuring accurate captures even on fully-saturated networks.

## Keywords

Gigabit, full duplex, real-time statistics

## Minimum Hardware Requirements for Full-duplex Gigabit Capture and Analysis

A 32 bit card running at a clock rate 33MHz cannot keep up with full-duplex gigabit traffic:

$33 \text{ million} \times 32 = 1.056 \text{ Billion}$  (1.056Gb or 132MB/sec processing capacity)

A full-duplex gigabit connection can generate data at twice that rate (2 billion bits/sec or 250Mbytes/sec). The table below shows the theoretical performance limits for various clock/bus combinations, expressed in both Gb/sec and MB/sec (determined by dividing the number of Gbits into 8 bytes):

Clock rate	Bus Width	Performance Limit
33MHz	32bit	1.056Gb or 132MB/sec
33MHz	64bit	2.112Gb or 264MB/sec
66MHz	32bit	2.112Gb or 264MB/sec
66MHz	64bit	4.224Gb or 528MB/sec

To keep up with full duplex traffic, a 32 bit capture card must clock at a minimum of 66MHz, or it needs twice the bus width (64 bits). Given that a PCI card does not control the bus 100% of the time, it's prudent for the card to exceed the minimum throughput requirement if you want to prevent dropped packets in the real world.

If the gigabit network exceeds 50% utilization, a 32bit/33MHz card cannot keep up: *it will drop packets, and any analysis performed will*

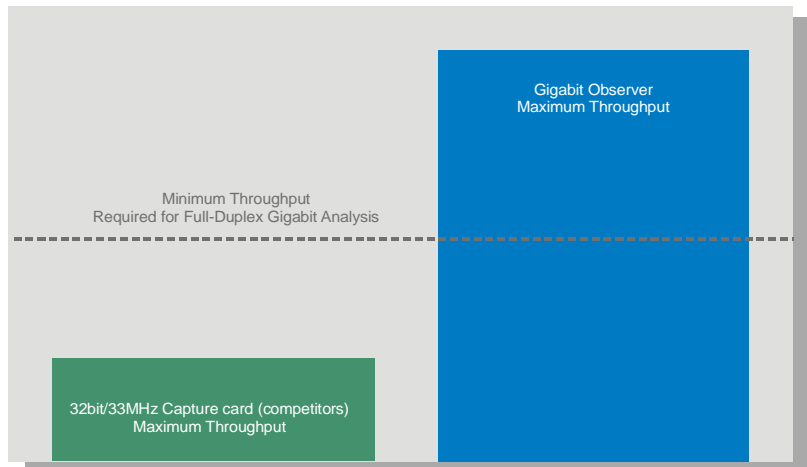


Network Instruments, LLC  
8800 West Highway Seven  
Fourth Floor  
Minneapolis, MN 55426 US  
(952) 932-9899  
(952) 932-9545 Fax

One Network—Complete Control  
Wired to Wireless, LAN to WAN

[www.networkinstruments.com](http://www.networkinstruments.com)

*not be accurate.*



Network Instruments Gigabit Observer's capture card provides a throughput of 64 bits at 66MHz, giving the analyzer a cushion against bus contention to ensure *accurate* analysis.

### **Network Instruments' Observer: A Trustworthy Solution from a Trustworthy Partner**

Network Instruments has been providing protocol analysis and network monitoring solutions for over a decade, with a proven track record of performance for medium to large networks. Visit our website for downloadable demos, white papers, reviews and case studies to see how Network Instruments can keep you in control of *all* your network technologies.