Odin TeleSystems Inc

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Choosing a Non-Intrusive Monitoring Platform

White Paper by Vijay Kakumanu – Product Manager

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Choosing a Non-Intrusive Monitoring Platform

Abstract

Selection of a network interface card plays an important role in building a robust network monitoring solution. Reduced host processor utilization, high data throughput, ease of application development and line density are important factors to evaluate.

With many hardware platform vendors in the market, it is increasingly becoming a complex task for developers/solution providers to choose the right platform vendor. This paper examines the various parameters involved in evaluating and choosing a line interface card to build a cost effective network monitoring solution without sacrificing functionality.

Overview

Network monitoring is becoming increasingly ubiquitous in the telecom industry as more and more carriers and enterprises are seeking to monitor their networks. Demand for Call tapping and telecom surveillance solutions are also on the increase due to growing security concerns. With increased competition, vendors of monitoring solutions are faced with a new challenge of reducing cost of network monitoring to stay competitive.

Monitoring systems provide useful feedback, which helps the service providers to

1. Adhere to Service Level Agreements
2. Improve enhanced services
3. Comply with legal requirements.

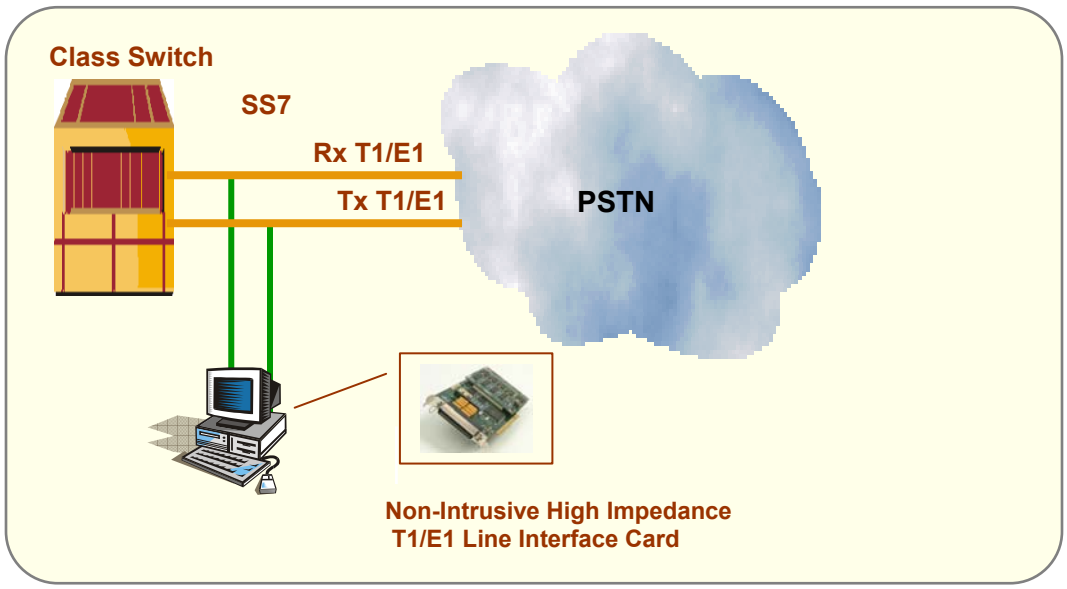
Example applications of network monitoring:

SS7 link monitoring
ISDN monitoring
Call Surveillance
Wireless network monitoring

SS7, an out of band signaling protocol, is one of the most popular signaling protocols today. SS7 is extensively used by wire line as well as wireless operators, to set-up and teardown calls. Monitoring SS7 link utilization and traffic parameters is crucial to the carriers in maintaining and providing enhanced services. Effective network monitoring provides carriers with constant feedback, which can be used to enhance existing services and for the deployment of new services.

We will examine the role played by a network interface card in an SS7 monitoring solution below.

Figure below illustrates a block diagram of an SS7 link monitoring system.



A typical monitoring solution comprises of:

- Physical network Links
- Network Interface Cards
- Telecom protocol decoding
- Application software
- Powerful servers

A closer look at this solution reveals that a network interface card interfaces with an SS7 or an ISDN switch. A non-intrusive network card achieves the goal of tapping the real time traffic between the switches by way of a high impedance feature.

Typical SS7 links are usually 64kbps or 56kbps T1 or E1 channels. Signaling links are bidirectional and both directions need to be monitored. In other words, both the Tx and Rx ports have to be received by the line interface card as shown above.

As we have seen from above example, choosing a network interface card is critical to build a robust monitoring solution. We investigate further on various parameters involved in evaluating network interface card.

Choosing a Line Interface Card:

Following are some of the parameters to consider while choosing a network card for monitoring:

Form factor:

Network interface cards come in various form factors like ISA, PCI, PCMCIA, and cPCI. ISA is a legacy form factor available in older generation computer systems.

PCMCIA based network card may be the ideal choice when the desired qualities of a solution are mobility and flexibility. PCMCIA based network cards may be used to build laptop and handheld based monitoring systems with the ability of monitoring up to 2 SS7/ISDN links. A PCMCIA based solution is constrained by the limited capability of the host processor and the PCMCIA bus throughput.

PCI form factor has evolved since its inception many years back. It has proven to be a robust interconnect platform with higher bus throughput. PCI based network cards make an ideal choice for PC based medium sized monitoring systems. Today four to five PCI slots can be found in a standard desktop PC. With higher integration, it is now possible to monitor up to 32 SS7/ISDN links using a single PC. It is also possible to acquire passive back-plane PCI systems with multiple PCI buses thereby further increasing the possible number of PCI boards that can be installed in the system.

CPCI form factor is the popular choice when it comes to building massive large scale monitoring systems of 48 SS7/ISDN links or higher. CPCI also supports hot swap.

Scalability:

One of the most critical parameters is the CPU load of the host. This becomes especially important when the line density is high. Network cards with data DMA feature reduce host processor utilization significantly. The reduced host processor load allows higher line integration resulting in scalability. Higher line integration also results in lower cost per line. Higher line integration per board also means easy maintenance.

Software development API:

Software development environment is one of the crucial building blocks for any platform. Ease of development should be of paramount importance when it comes to choosing the right hardware platform. Flexible and open architecture based software development environment facilitates in faster development time and hence reduced time to market.

Framer and HDLC Processing: The framer is an important component of a network interface card. The framer should be able to extract and insert signaling information. The framer should also be able to decode and encode HDLC packets. The network interface card should also support SS7 FISU and LSSU filtering.

H.100 Computer Telephony bus:

H.100 CT bus allows multiple cards to be interconnected over the H.100 bus. H.100 CT bus allows connection to any of the timeslots and performs local timeslot switching. This feature is important when considering scalability.

Odin's Solution

Odin's Gimle-16-PCI-Plus and Thor-8-PCI-Plus are most suitable for high integration network monitoring. Monitoring of up to 4 or 8 SS7/ISDN links can be achieved using a single PCI card. Gimle and Thor PCI series of networks cards have many distinct advantages:

Advantages of choosing Odin's line of network cards:

1. Programmable Line Interface mode between T1 and E1: Odin's line of network cards has the flexibility of selecting between T1 and E1 mode.
2. Multiple Clocking Options: Ability to choose clocking from line interfaces or use the onboard oscillator.
3. High Impedance Mode: Allows non-intrusive monitoring capability. 10dB, 20dB, and 30dB modes.
4. Support for multiple operating systems: Odin's cards support Microsoft Windows NT/2000/XP/98 and Linux operating systems.
5. Scalability: There are significant cost advantages in using a high-density line cards. With four Gimle PCI cards loaded, monitoring of up to 32 SS7 links is possible.

Conclusion

Network monitoring is an important task in controlling and maintaining a modern network. Today's market demands monitoring platforms that are scalable, cost effective and facilitates rapid application development. As explained above, choosing the right monitoring platform is critical for building cost effective and reliable monitoring solutions. Odin's monitoring platform offers high scalability, performance and reduced time to market.

About Odin TeleSystems Inc

Odin TeleSystems Inc. is a privately held Texas corporation specializing in manufacturing, design, and sale of OEM-subsystems for the Telecommunications industry. Odin's award-winning products represent outstanding cost/performance value for today's service providers and telecom equipment manufacturers. Innovative and flexible systems enable service providers and equipment manufacturers to provide reliable and leading-edge communications services and products for T1/E1/J1, Integrated Services Digital Networks (ISDN), Frame Relay, Voice over IP (VoIP), Signaling System Number 7 (SS#7), and Digital Wireless (e.g. GSM).
For more information, please visit Odin TeleSystems Inc at http://www.odinTS.com/ or contact the U.S. office at 972-664-0100 or by Email at info@odinTS.com.

HeadQuarters:

Odin TeleSystems Inc
800 E Campbell Rd, Suite#334,
Richardson, Texas 75081
USA
Tel: +1-972-664-0100
Fax: +1-972-664-0855