Networking applications need better management and throughput capabilities

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OVUM VIEW

Managing high-speed IP networks requires realtime data

As more applications rely on IP-based Internet service delivery models, including realtime facilities such as VoIP, video streaming, IPTV, and financial trading, Internet bandwidth demands are growing at rates of over 60% per year. These constantly expanding usage demands drive the need for faster line speeds and just as importantly the requirement for better data monitoring and management tools.

Making use of intelligent network management technology, which provides the ability to understand the data movement activities of the business, while delivering operational services as efficiently and safely as possible, can also save on additional bandwidth overheads.

Network management systems that claim superfast throughput (10Gbps and above) but fail to perform or drop data packets give the network management market a bad name. The ability to deliver high-speed throughput and at the same time provide the realtime data needed to effectively manage IP networks and services is a fundamental requirement. However, such systems need to be capable of capturing and analyzing all data at line rate, otherwise packets will be dropped and critical management data can be missed.

IP networks are dynamic and require effective management to achieve throughput efficiencies

To keep up with throughput demands as workloads continue to increase requires evermore efficient networking tools. IP networks are dynamic; they often change on a packet-by-packet basis. Therefore, their management systems need to be equally active and responsive. These objectives can be achieved using dedicated network appliances, commonly referred to as probes. Probes sit in the network to monitor and analyze traffic in realtime, and provide the detailed information that network management systems need to keep pace and deliver efficiency. Pulling together the key components of service using an IP network (understanding dynamic data, throughput management, and service delivery) requires a complete infrastructure that can support all necessary elements.

Network management appliances are built using various approaches, but for a cost-efficient and high-performance solution the universal network appliance (UNA) approach can provide an attractive option. UNA makes use of inexpensive hardware and software to deliver high-volume services and can be used for a wide range of throughput management and network security applications. It brings together intelligent network adapters for high-speed capture and monitoring of realtime data and standard, commercially available servers from suppliers such as Cisco, Dell, HP, and Intel to deliver a generic network management platform.

Apart from cost savings, the main business benefit when considering the network appliance approach is the effective monitoring and management of throughput. Most leading hardware manufacturers deliver very powerful servers that, if deployed and utilized effectively, can fulfill a wide range of data management projects. The key issue is how such devices are operated. There needs to be an ability to ensure that all data is captured and can be analyzed in realtime.

However, standard network interface cards (NICs) in common business servers simply cannot handle the amount of input/output (I/O) generated in high-speed networks. UNA addresses this challenge by providing a reliable, low-risk hardware platform for network appliances that can deal with high-volume I/O issues. It also allows new appliances to be developed quickly as the main task is to define how collectable data should be processed and analyzed by application software. This in turn has the advantage of being based on standard, well-known tools and operating systems.

Improving data throughput and service delivery is challenging

Traditional network management still has something of a telecoms mindset that is driven by fault, configuration, accounting, performance, and security (FCAPS) considerations, and centralized network management software that is fed information by polling routers and switches. It uses

telecoms protocols that have built-in management information that is not available in Ethernet/IP protocols. It also relies on the fact that the network is relatively static; what you see today is what you will also see tomorrow. This is definitely not the case with IP, where the network can change on a packet-by-packet basis.

Using network appliances based on a UNA approach, data collection can be performed at critical points in the network. Network appliances/probes provide data in realtime, but importantly also process and analyze that data in realtime, allowing relevant and instant management decisions to be made close to the line of business.

An example of the UNA approach is provided by Napatech. Its intelligent network adapter portfolio enables OEM customers to build cost-effective network appliances that meet a range of network monitoring, security management, and traffic generation requirements. Its adapters are used to support full line-rate capture, frame and packet analysis, protocol analysis, data recording, intrusion prevention, lawful interception, and traffic generation.

The appliance/probe approach to network management provides benefits

The delivery of data and voice services involves a wide range of networking products that not only deliver services but also monitor, support, and protect everyday business activities. It extends to the use of security applications that take action against suspect data packets.

For organizations there are usage and size issues. Business networks range from local area networks (LANs) to large enterprise systems linking together thousands of sites and services. For the network appliance/probe approach to become valued there is a need for practical, easy-to-build approaches for bringing together open source components, off-the-shelf servers, and specialist adapters to deliver data monitoring and management, high-volume throughput, and security services.

Ovum recognizes many of the advantages that can be attributed to the UNA approach. These include using best-of-breed products that can be molded to fit specific applications for data monitoring and management, throughput delivery, systems protection, zero-packet loss, and lower deployment costs.

It provides integration efficiencies and cost-saving benefits for vendors looking to deliver end-to-end network management solutions. The comparison has to be made with prebuilt packaged products based on proprietary hardware developments that have a standard setup but a higher price tag and less flexibility, and also against in-house developments where organizations retain control but may have longer development cycles and higher technical and financial overheads. The UNA approach can also add value where enterprise requirements cannot be satisfied by commercially available products and a specific solution needs to be delivered.