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Quality Metrics for Network Services

By Fanny Mlinarsky

Year after year enterprises make significant investments to improve the quality of network services either through faster equipment or through more efficient protocols. Yet, the networking industry still does not have any objective metrics for Quality of Service (QoS). Different industry sectors have their own definitions of quality. QoS is defined in three different unrelated ways at the Ethernet layer, at the IP layer and for the ATM networks. These disparate definitions of quality confuse the market and offer no objective metrics of acceptable quality.

Service Level Agreements (SLAs) for web and Internet access are industry's initial attempts at defining QoS metrics. However, these SLAs are not based on any objective standards. They vary by customer and by service provider.

The lack of a single industry standard typically breeds complexity, and the case of QoS is no exception. Software products, such as the Agilent Firehunter, designed to verify SLA compliance are of necessity complex. Due to the lack of standard quality metrics, the end users are forced to specify their own performance metrics through baselining. The process of baselining entails measuring the existing levels of performance with the goal of establishing performance objectives. This process requires sophisticated software and sophisticated users and may not always result in acceptable network performance.

Agilent to Create a Defacto QoS Standard

The time is right for the networking industry to introduce a single unified definition of QoS and to establish objective metrics for common services such as web and Internet access, file server performance and other services. The existence of such a standard would make it possible to introduce simple, inexpensive test tools for verifying the performance of network services – tools that avoid the complexities of baselining and that work straight out of the box.

The launch of the FrameScope 350 hand-held analyzer provides an excellent opportunity for Agilent to define objective QoS metrics. The FrameScope 350 is designed for technicians who install and troubleshoot Ethernet networks. The Autotest tool measures performance of all key network services on a given network at the touch of one button.
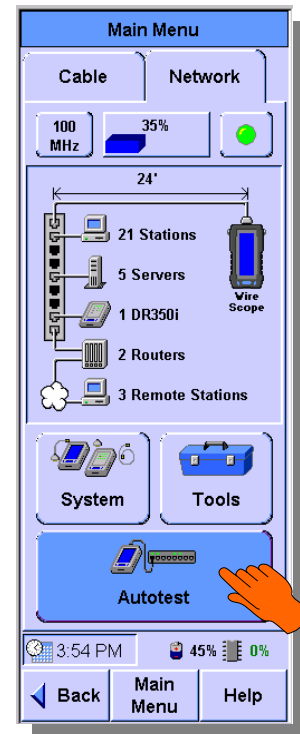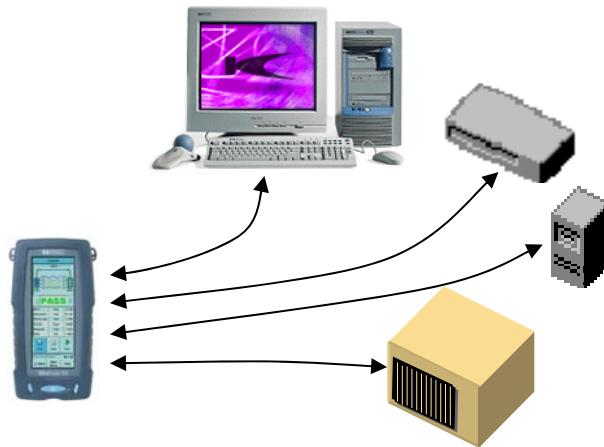
The FrameScope 350 can test the responsiveness and performance of web servers, file servers, DHCP servers, print servers and email servers. The Autotest results are presented to the user in the form of

metrics. Metrics could be as simple as a performance grade for each service on the scale from 1 to 10 where 10 represents the highest level of performance.

This concept of simple grading is new in the networking industry and may generate some controversy. The nearest example of similar kind of metrics is the cabling categories – category 3, 4, 5, 5e and 6. Telecommunications Industry Association first introduced the concept of cabling categories in the 1995 TIA-568A standard. Since then, the cabling industry has been building upon this standard, defining new higher levels of performance and introducing cable certification standards. The well-defined standards for cable quality have considerably simplified network installation and have provided the end users with the assurance that network services will work reliably, at least at the physical layer. But while the physical layer specification and testing have become simpler, nothing has been done to simplify the quality assurance process for active networking services.

FrameScope 350 Launch

FrameScope 350 is the first tool that measures the performance of network services using an objective scale. The central theme of the FrameScope 350 launch is the definition of the QoS metrics. The definition of these metrics is a challenging undertaking. We expect to partner with other Agilent divisions, such as NSTD and Firehunter, who have expressed interest in working with us on the QoS metrics. As part of our launch we plan to seek endorsement of major target customers – 3rd party network integrators, enterprise support staff and service providers. We will also look to partner with other companies that have done relevant QoS work and will seek the endorsement of respected networking test labs, such as Tolly Labs. We plan to publish a number of detailed white papers defining QoS metrics and explaining how the Agilent grading system works.

In short, we plan to have an impactfull launch that will grab industry attention and generate a lot of press. Controversy will be welcome – it is a powerful way to stir up publicity. However, we need to be well prepared to defend our work.

For this launch to have the intended impact we need the support and endorsements of renowned industry experts. To get the needed endorsements, we must engage some high caliber consulting talent to help with the following tasks: (1) acquire the proper background and learn who has done what kind of related work already; (2) define the QoS metrics and (3) publish articles about these metrics.