

Combination of Conformance, Performance and Interoperability Testing for Internet Applications

Mazen Malek and Roland Geche

Theoretically, conformance yields interworking and interoperability. This was the main driving force behind OSI systems. By having a glimpse at its methodology, conformance testing addresses the tested system with an exhaustive set of test cases, those of unwontedly complex structure and layout. Internet community, on contrast, was invented to overcome those drawbacks, and possibly eliminate the underlying complexity of conformity verification. This, unquestionably, eases real procurements and makes Internet so familiar. Because of such point of views, and due to the limited types of exchanged messages, conformance testing phase is not evaluated. Nevertheless, unconformed systems are sources of unaccepted functioning. Especially, when applications try to include sophisticated features, like persistent connection over TCP/IP stack or cache operations in proxy systems. This puts such applications on edge, and makes implication of their interoperability a hope rather than a culmination.

As a matter of fact, applicability of OSI conformance testing, generation of test suites, performance and interoperability testing of Internet protocols are fairly unfetched areas. The verification of interoperability is the process of demonstrating a successful communication between tested systems. This has a couple of views. First view is considering it as an absolute concept. Consequently, each system will have a certain measure to show its interoperability with similar ones. Second view is defining systems interoperability by performing pairwise tests. Performance testing, however, stands for testing system's capabilities in terms of traffic and load characteristics. In Internet community, the foregoing terminology stands for server's successful fulfillments of client requests. Verifying such requirements should be thought within the context of real time communications.

This paper, which tries to establish a framework for testing Internet implementations, will put previously untouched areas under focus. It starts with establishing a good study for testing interpretation on OSI-bases. This will contain, also, testing schemes and architectures. Afterward, the various interoperability requirements between different implementations will be shown. Additionally, an efficient step-by-step based testing algorithm is argued. This algorithm is cost-effective one and of great importance. The remainder of this paper use practical communication protocols, like HTTP, to describe illustratively these concepts