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SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS
AND NEXT-GENERATION NETWORKS

Internet protocol aspects – Quality of service and network
performance

Framework for higher-layer protocol performance parameters and their measurement

ITU-T Recommendation Y.1562

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ITU-T Recommendation Y.1562

Framework for higher-layer protocol performance parameters and their measurement

Summary

ITU-T Recommendation Y.1562 defines the parameters and methodology used to assess the service provided by higher-layer protocols. Parameters include performance parameters and availability parameters, such as high-layer packet transfer throughput, service delay, availability and so on. The methodology and parameters described in this Recommendation are applicable to networks supporting both IPv4 and IPv6.

Source

ITU-T Recommendation Y.1562 was approved on 1 March 2007 by ITU-T Study Group 12 (2005-2008) under the ITU-T Recommendation A.8 procedure.

Keywords

Availability, DHCP, FTP, higher-layer protocol, HTTP, performance, QoS.

FOREWORD

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ITU-T Recommendation Y.1562

Framework for higher-layer protocol performance parameters and their measurement

1 Scope

This Recommendation defines the end-to-end higher-layer performance parameters such as throughput, service availability and so on, and an associated evaluation methodology. The methodology described in this Recommendation relates to end-to-end higher-layer protocols based on IPv4 and IPv6, and the performance parameters described in this Recommendation are used to assess the service status of higher-layer protocols. The methodology and parameters described in this Recommendation are applicable to networks supporting both IPv4 and IPv6.

The node in the end-to-end model described in this Recommendation may be a host, router, switch or network device. The only requirement is that it should support a higher-layer protocol and test function.

The methodology described in this Recommendation can be used to examine the status of higher-layer protocols which provide service to the customer, and provide performance parameters to assess the service quality.

The performance parameters are intended to be used in planning and offering international higher-layer protocol service. The intended users of this Recommendation include carrier service providers, equipment manufacturers and end users. This Recommendation may be used by service providers in the planning, development, and assessment of IP service that meets user performance needs; by equipment manufacturers as performance information that will affect equipment design; and by end users in evaluating higher-layer protocol service performance.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T G.1000] ITU-T Recommendation G.1000 (2001), *Communications Quality of Service: A framework and definitions*.
- [ITU-T G.1010] ITU-T Recommendation G.1010 (2001), *End-user multimedia QoS categories*.
- [ITU-T I.350] ITU-T Recommendation I.350 (1993), *General aspects of quality of service and network performance in digital networks, including ISDNs*.
- [ITU-T Y.1540] ITU-T Recommendation Y.1540 (2002), *Internet protocol data communication service – IP packet transfer and availability performance parameters*.
- [ITU-T Y.1541] ITU-T Recommendation Y.1541 (2006), *Network performance objectives for IP-based services*.
- [ITU-T Y.1560] ITU-T Recommendation Y.1560 (2003), *Parameters for TCP connection performance in the presence of middleboxes*.

3 Definitions

This Recommendation defines the following term:

3.1 measurement point (MP): A MP is located at the interface between the transmission layer and a higher layer on a host that separates the customer network from an attached transmission system, and at which a reference event can be observed and measured.

4 Abbreviations

This Recommendation uses the following abbreviations:

CESR	Connection Establishment Success Ratio
DHCP	Dynamic Host Configuration Protocol
FTP	File Transfer Protocol
HLAD	Higher-Layer Authentication Delay
HLDTD	Higher-Layer Data Transfer Delay
HLPT	Higher-Layer Packet Throughput
HLSD	Higher-Layer Service Delay
HLSRD	Higher-Layer Service Response Delay
HTTP	HyperText Transfer Protocol
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
MN	Measurement Node
MP	Measurement Point
NMS	Network Management System
SA	Service Availability
SSR	Service Success Ratio
TCP	Transmission Control Protocol
UDP	User Datagram Protocol

5 Conventions

None.

6 Reference model for higher-layer protocols

6.1 Layered model of higher-layer protocols

Figure 6-1 illustrates the layered nature of high-layer protocols. The performance provided to higher-layer service users depends on the performance of the transmission layer, IP layer and other layers.

- Lower layers include the physical layer and link layer supporting the IP layer.