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Analysis of class-based home network QoS solutions

ITU-T H-series Recommendations – Supplement 11



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Supplement 11 to ITU-T H-series Recommendations

Analysis of class-based home network QoS solutions

Summary

Supplement 11 to ITU-T H-series Recommendations provides the gap analysis of class-based home network QoS solutions. Specifically, five documents in relevant SDOs which contain provisions of home network QoS solutions are analysed. Some aspects of class-based QoS solutions such as the number of classes and practices of DiffServ code point (DSCP) are compared and summarized. In addition, this supplement identifies some issues that need to be considered in future Recommendations.

Source

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Keywords

Class-based QoS, DSCP, home network.

FOREWORD

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Introduction

There are two types of QoS mechanisms, i.e., class-based and session-based QoS mechanisms, used in the home network. The class-based QoS mechanism has an advantage of simplicity; however, it does not guarantee the level of QoS unlike the session-based QoS scheme. In a typical class-based QoS mechanism, each IP packet is classified into a small number of classes which are typically 4-8, and its priority is identified by QoS marking using a certain value, e.g., DSCP. Each network device uses this marking information within the IP packet to find its relative priority and handles the packet according to the priority.

An important issue on the class-based scheme is that all devices including bridging and terminal devices need to comply with the single policy. Without having a well-coordinated single policy, the integrity of QoS will be lost. This means that such network is not different from the "best-effort network" because packets cannot be treated differently based on the priority.

This nature of class-based QoS mechanism raises a challenge for standardization. There are some documents which include the description of QoS marking, and consistency among these documents needs to be checked.

Furthermore, it may not be enough even if all the home network documents are completely consistent. The home network is typically connected to the access network through UNI that is defined by each telecom carrier. As mentioned in [ITU-T H.622], the home network has two roles: extension of access network and interconnection between home network devices. In [ITU-T H.622], the former case is called the primary domain, while the latter case is called the secondary domain. It is possible and likely that the both domains will overlap physically, particularly in case of the IP-based home network. This means that the traffic complying with the access network specification can compete for the network resources with the traffic complying with the different home network specification. Inconsistency between the home network and the access network specifications may undermine the transmission quality.