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QoS at ADSL

Scope:

The document describes the mechanism of QoS at ADSL port of a networking device. The original version is English.

Applicability:

This specification is a valid document issued by the company Telefónica O2 Czech Republic, a.s.

Process:

Operational support

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CHANGES EVIDENCE				
Change Kind	Change Number	Valid From	Reason and Description	Chapter

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1 DESCRIPTION

1.1 Scope

The purpose of the document is to describe mechanism of QoS at ADSL port of a networking device. The original version of this document is English.

1.2 Validity and obligation

This document is a valid recommendation of the company Telefonica O2 Czech Republic, a.s. specially for supplier and producer end equipment. It is valid from the date set on the first page.

1.3 Definitions, symbols, abbreviations

ADSL	Asymmetrical Digital Subscriber Line
DiffServ	Differentiated Services
IETF	Internet Engineering Task Force
IP	Internet Protocol
QoS	Quality of Service
TCP/IP	Transmission Control Protocol/Internet Protocol
RTP	Real Time Protokol
UDR	User Datagram Protocol
VoG	Voice Gateway
VoIP	Voice over IP

1.4 References

IETF RFC 791	Internet Protocol
IETF RFC 1878	Variable Length Subnet Table for Ipv4
IETF RFC 2474	Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers

IETF RFC 2475	An Architecture for Differentiated Services
IETF RFC 2597	Assured Forwarding PHB Group
IETF RFC 3140	Per Hop Behavior Identification Codes
IETF RFC 3246	An Expedited Forwarding PHB
IETF RFC 4594	Configuration Guidelines for DiffServ Service Classes

2 IP QoS IN UPSTREAM DIRECTION - PRIORITY SCHEDULING

Strict priority

Strict priority is recommended for queuing of the scheduling mechanism at ADSL port of a networking device. Scheduler is servicing the Highest Priority queue. After servicing of IP packet, the scheduler re-scans IP packet to be sent starting from the Highest Priority queue.

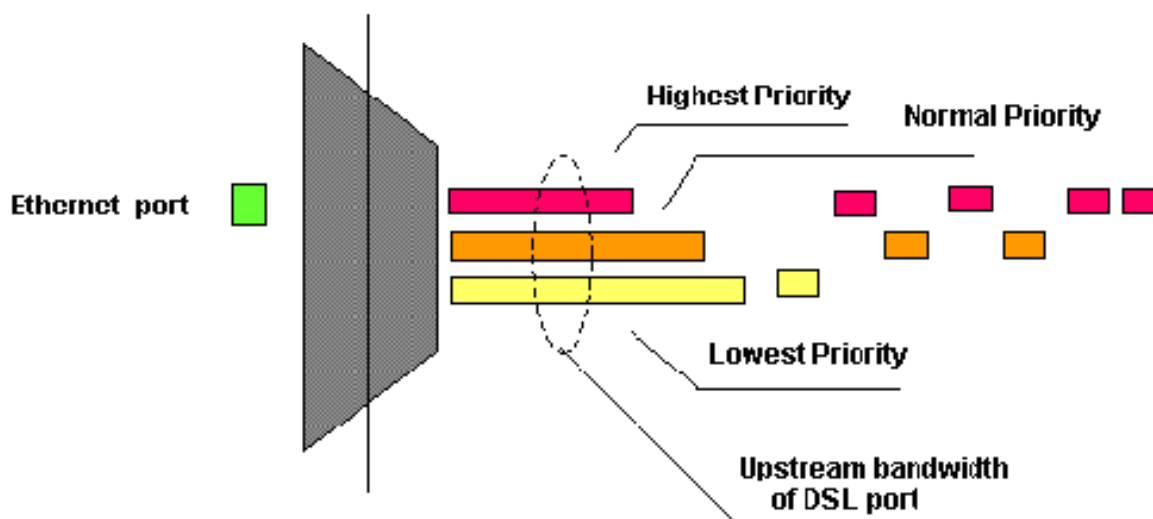


Figure 1 – Strict priority queuing with tree queues

Priority mapping

VoIP speech channel should be sent through the Highest Priority queue, VoIP signaling channel should be

serviced with Normal Priority queue. Remaining the Lowest Priority queue should be used for non-priority traffic.

Classification and DSCP Marking

Network traffic entering QoS domain is subjected to priority classification and conditioning. Traffic may be classified to differentiate priority by many different parameters, such as source address, destination address, source port, destination port etc.

VoIP speech Channel DSCP marking

IP traffic that is bearing IP/UDP/RTP VoIP speech channel should be marked with EF DSCP pattern to assure correct processing within DiffServ domain. Binary code of EF DSCP is 10111. It is recommended to mark IP packet at Voice Gateway.

VoIP signalling Channel DSCP marking

IP traffic that is bearing VoIP SIP signalling channel should be marked with CS3 DSCP pattern to assure correct processing within DiffServ domain. Binary code of the EF is 011000. It is recommended to mark IP packet at Voice Gateway.