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# Summary

## Internet Quality of Service

**Date:** 20 sep 2007

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**Course** DVGC02

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## Quality of service

The idea of Quality of service, further written as QoS, is that we want to define a way to provide service differentiation and performance assurance for Internet applications. This QoS is different from application to application and a general rule is not possible to make. Some applications are sensitive to package loss and others are not. Some applications are also sensitive to jitter, for example streaming applications.

## The need

QoS is needed because of demands from humans needs or business interests. Take for example a phone call made over the Internet, it is important that the delay between the two participants are as low as possible. If the delay becomes of significant size it will be hard to keep a normal conversation. Other applications, such as Web Browsing does not have the same requirements. Here delay will not have any effect on the browsing but instead this type of application is loss sensitive - while phone calls are not.

Other types of systems who need a certain QoS are business systems. For example a bank can require that a transaction is done within a certain amount of time.

## Implementation

There are several ways to achieve QoS over Internet. Two of the most common ways are Integrated Services and Differentiated Services.

### Integrated Services

Integrated Services, further written as IntServ, is a per-flow based framework with dynamic recourse reservation. With IntServ routers must allocate resources in order to provide a quantifiable QoS. For this IntServ uses RSVP to establish a state between sender and receiver. Along the way buffer space and bandwidth are reserved. In order for this to work all the routers in Internet has to be able to handle RSVP. Today there are very few routers that implements this — which is a problem because then all routers have to be upgraded to handle IntServ at the same time.

The benefits with IntServ is that a upper bound of delay can be defined as well as reserved bandwidth.

### Differentiated Services

Differentiated Services, further written as DiffServ, was developed to address some of the problem in IntServ. DiffServ redefines the TOS field in the IPv4 header as its DSCP field. DiffServ does not make judgements of the types specified in the DSCP field. It just adds a framework that the network operator can use to judge the type of package that is passing through its network. Therefore each router only has to look at the DSCP-field to decide the proper treatment for the specific package.

The policing and classifying of packages is done at the boundaries between DiffServ networks. This means that in the routers can get on with doing the job of routing, and not care about the complexities.

## Reflections

DiffServ seems to be a better choice to implement of these two presented ideas. It seems to be easier to implement and puts the complexity of the system at the borders.

Therefore different networks can act differently and there is no need for the core parts of the network to do any unnecessary job.

But I ask myself why do we need this? Is it because we want to send TV over the Internet, or maybe to call someone and make a video conference? TV broadcasting is best done in those broadcasting systems that the most countries have through their terrestrial TV systems. Why do we then need to multicast TV through the Internet? Today most of the TV-broadcasting's are done in SD but soon all channels will broadcast in HD. The significant differences between HD and SD is the bandwidth used. Is this not waste of bandwidth in Internet - and can this bandwidth not be used for something better?

There are, perhaps, several other applications to QoS that are good. For example do I know that some ISPs are using it to overbook their capacity in the network. But for those reasons they could use whatever they want, because it is in there AS and does not affect the whole Internet.