

QoS AND MOBILE TECHNOLOGIES

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CHAPTER 3

INTEGRATED SERVICES

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3.1 INTRODUCTION

Quality of Service is the network support to provide certain applications the resources they require. Resources include:

- Bandwidth: refers to the required throughput (in bits per second).
- Latency: is the time taken for a packet to propagate to its destination.
- Jitter: is the variation in the delay times for packets that build up the flow.
- Reliability: is the minimization of packet loss.

Integrated Services (IntServ) mechanism relies on the simple idea that to guarantee the availability of resources, they must be reserved first. A flow starts after it has made sure the resources required are dedicated for its end-to-end propagation. The sender first asks the routers along the traffic path whether enough resources are available for the flow. After receiving a confirmation, the application flow starts. Each router keeps record of its available resources. After reservation, it subtracts the reserved resources from total available resources. The most important part in this, the Resource Reservation Protocol (RSVP) was developed to signal and confirm reservations.

The defined services are classified into three categories: guaranteed service, predictive service, and best-effort service. The guaranteed service has the highest standard of QoS guarantees. The Quality of Service will be maintained no matter what other traffic behaviours are. A reservation made for a flow is based on the peak rate of the flow. The predictive service has the second highest standard of QoS guarantees. An application flow in this service category always receives statistically predicted guaranteed service. A reservation made for a flow is based on the average rate. The best effort service has the lowest priority. The packet that does not belong to any reserved session will be forwarded by the traditional Internet service, the best effort service. Since traffic handling is done per flow here, Weighted Fair Queue (WFQ) can be used to provide service fairness for the best effort application flows.

A very important issue that comes up is Admission Control. A router cannot simply commit to providing resources it may not have. Admission Control is invoked at each router every time a host requests a real-time service along some path through it to make a local accept/reject decision.