

# ***Differentiated Services for Wireless LANs***

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## **Agenda**

- Wireless differentiated services
- Bandwidth allocation and adaptive polling
- Architecture and implementation
- Experimental results

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## **Wireless DiffServ**

- Relative differentiated service
  - Absolute QoS guarantee is difficult due to traffic and channel variation
  - Prioritization instead of absolute guarantee
- DiffServ through DCF( Aad'01, Barry'01)
  - Different Contention Windows
  - Different DIFs(DCF interframe space)
  - Different maximum frame lengths

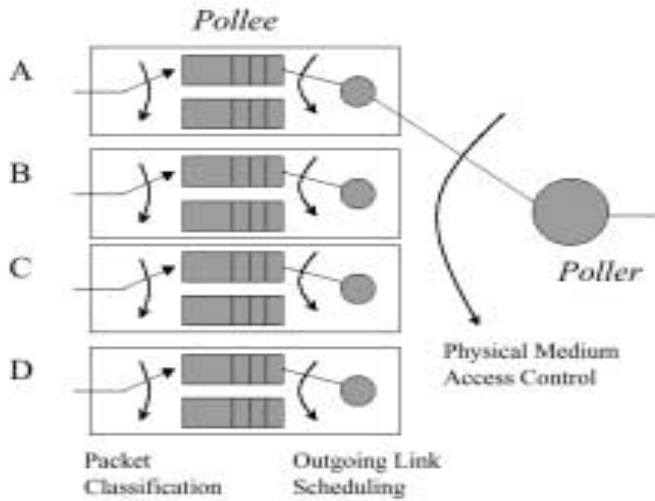
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## **Our Work**

- DiffServ through PCF
  - Class differentiation
  - Station differentiation
  - Adaptive polling(Adaptive allocation of bandwidth)
- Implementation
  - New architecture for QoS support
    - Link layer MAC on Application layer
  - Prototype developed

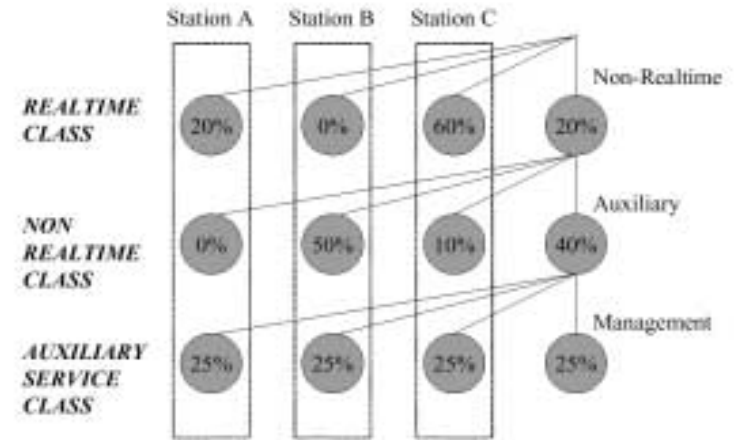
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## DiffServ over PCF



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## Bandwidth Allocation Scheme



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## Adaptive Bandwidth Allocation

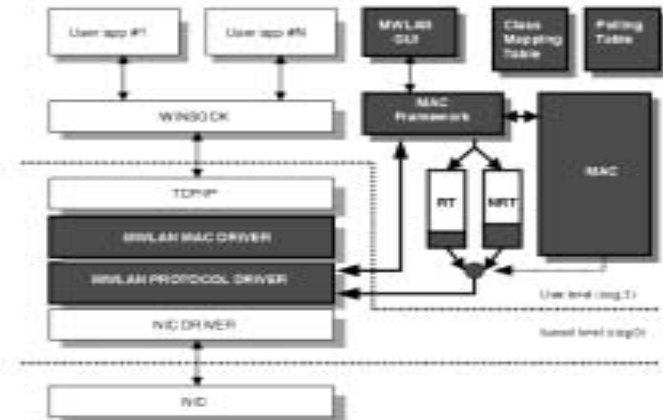
Bandwidth allocation map is dynamically changed to reflect *traffic + channel* variation

$$\phi_i^{RT} \leftarrow \phi_i^{RT} + \mu Q_i^{RT}$$

$$\phi_i^{NRT} \leftarrow \phi_i^{NRT} + \mu Q_i^{NRT}$$

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## MARK (Media Access Regulation Kernel)

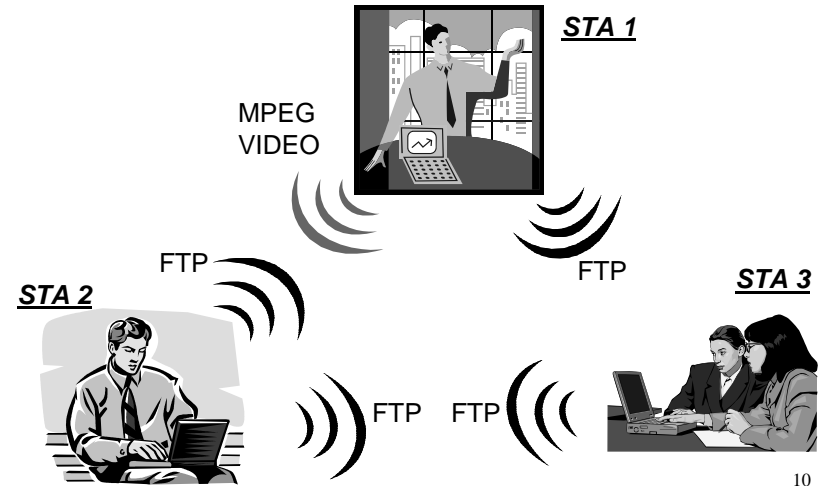


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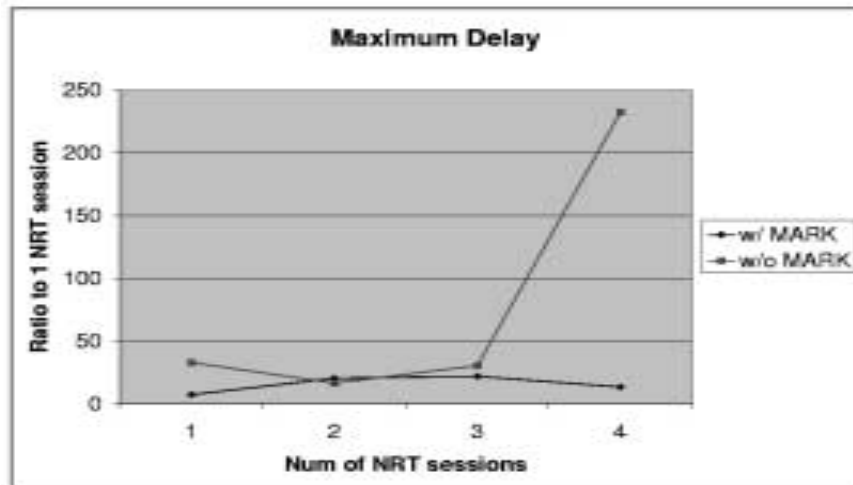
# Graphical User Interface



# Testbed



# Experimental Results



# Summary

- DiffServ using PCF mode provides better differentiation
- Dynamic bandwidth allocation and adaptive polling provide better utilization
- MARK architecture provides Relative DiffServ for wireless LANs