# A New Approach to Resource Allocation in ATM Networks and its Experiments on the Xunet Testbed

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# Outline

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2. General Idea
3. Resource Allocation
4. Optimal Allocation Scenario
5. Call Demands
6. Implementation
7. Experiments
8. Issues

# Resource Allocation Issues

What has been considered:

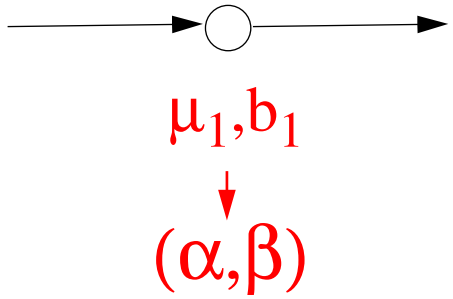
- Traffic Characteristics
- Quality of Service Guarantees

Additional consideration:

- Optimize utilization in the network
  (Steven Low at AT&T Bell Labs)

# General Idea

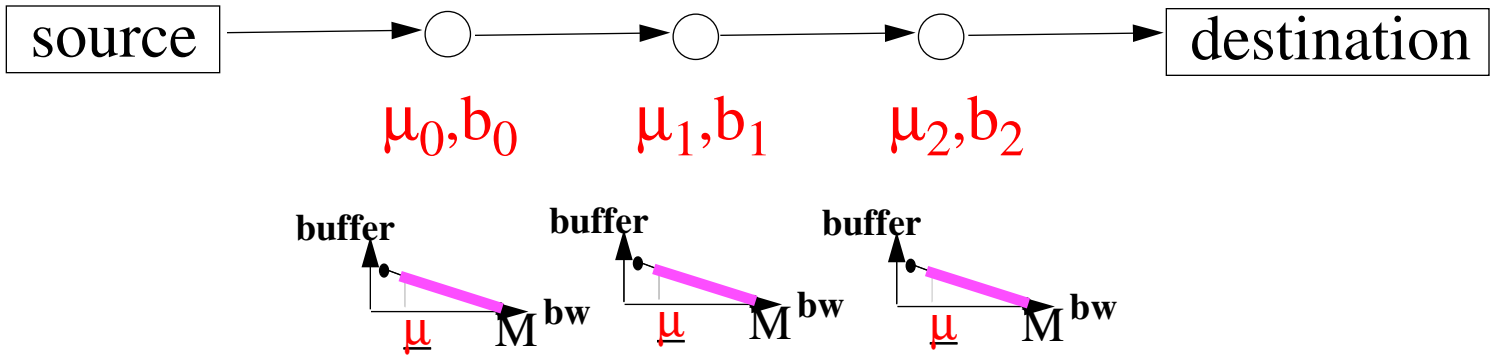
**Consider single node:**




**Depending on the usage of bandwidth and buffer space, prices for each node are set:**

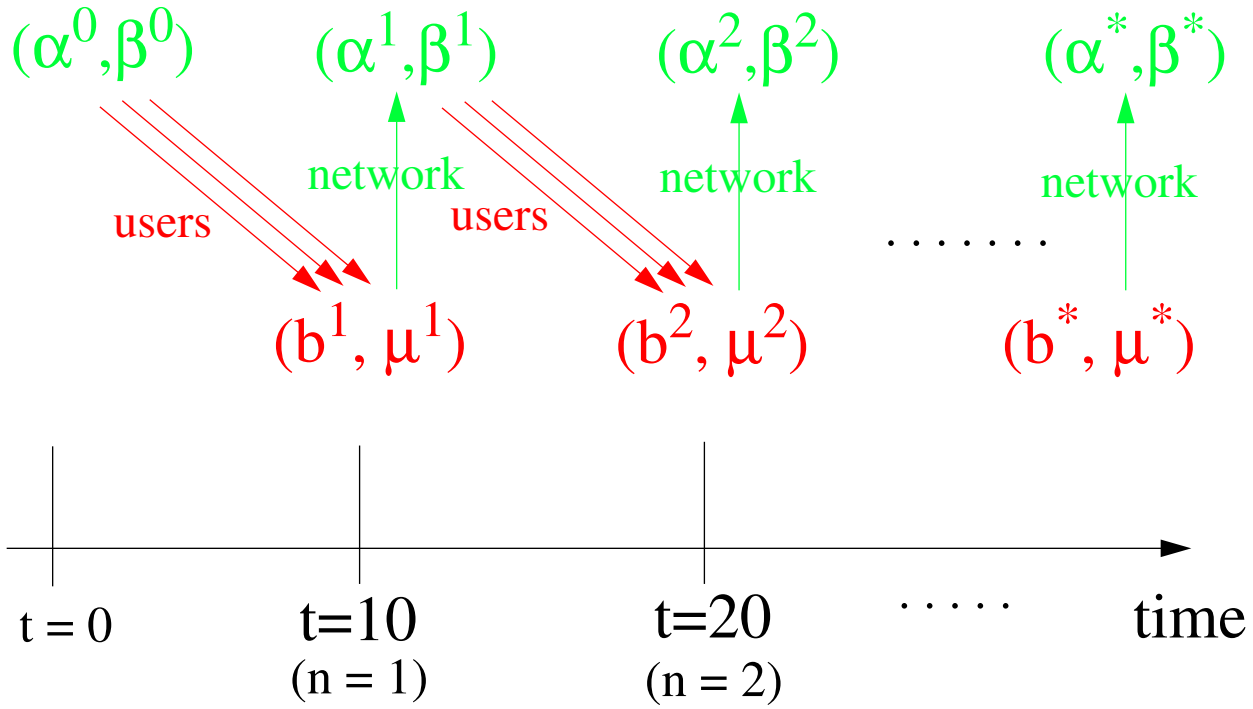
- $\alpha$ **price per unit bandwidth (cells per second)**
- $\beta$ **price per unit buffer (cells)**

# Resource Allocation

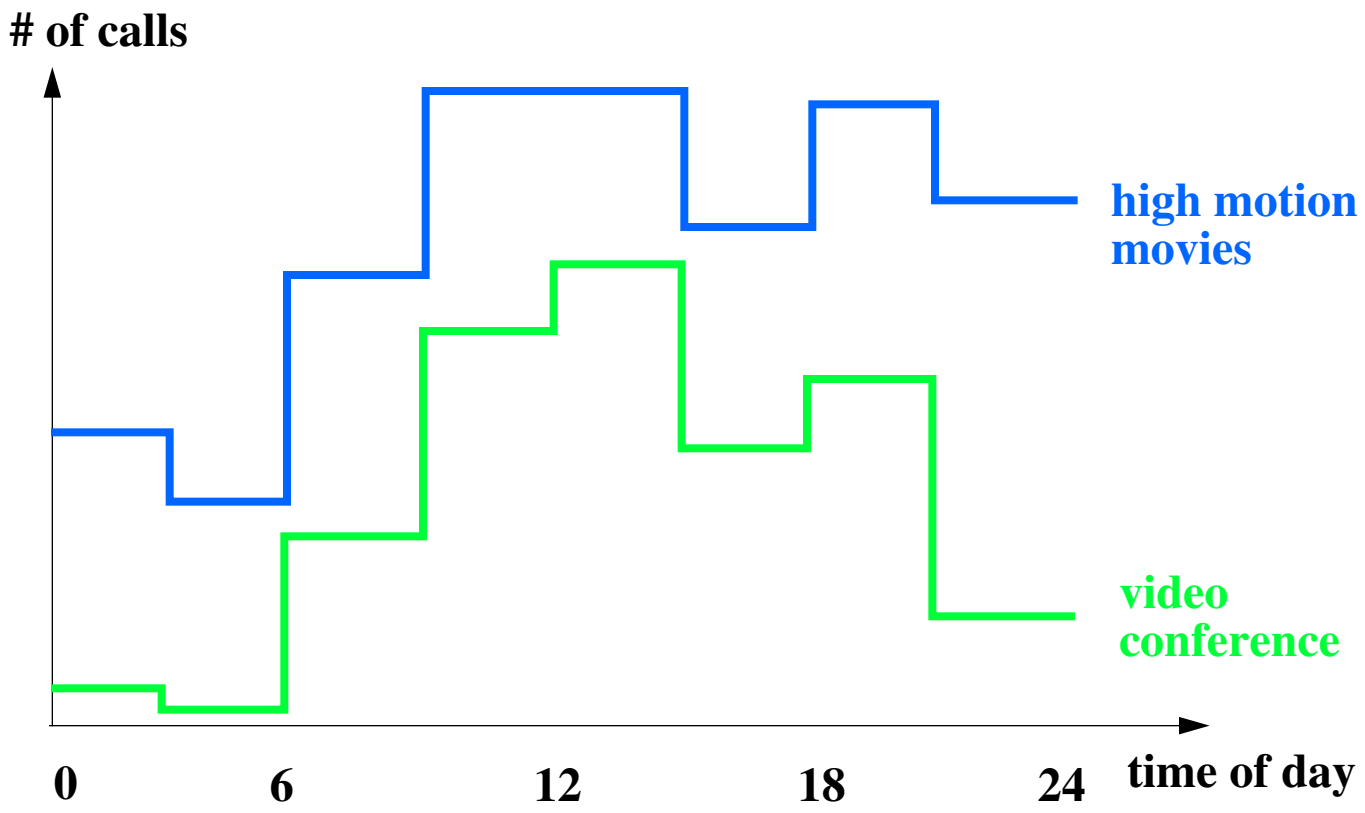



**Based on the prices and Q.O.S. constraints for the source, optimal ($\mu_n$, $b_n$) are found.**

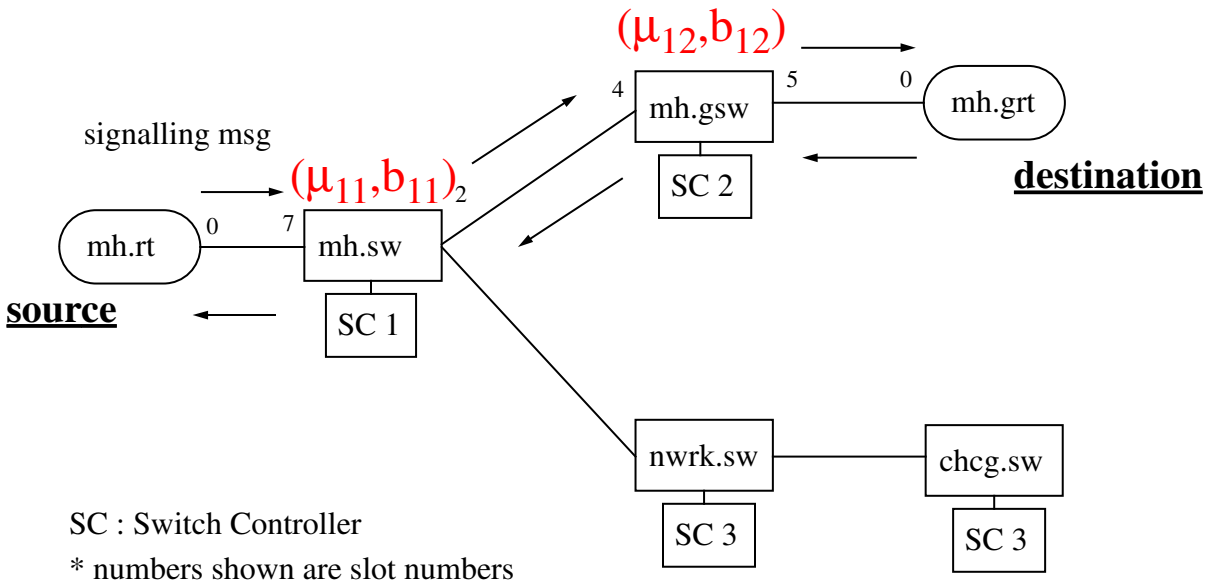
# Optimal Allocation Scenario



# Call Demands

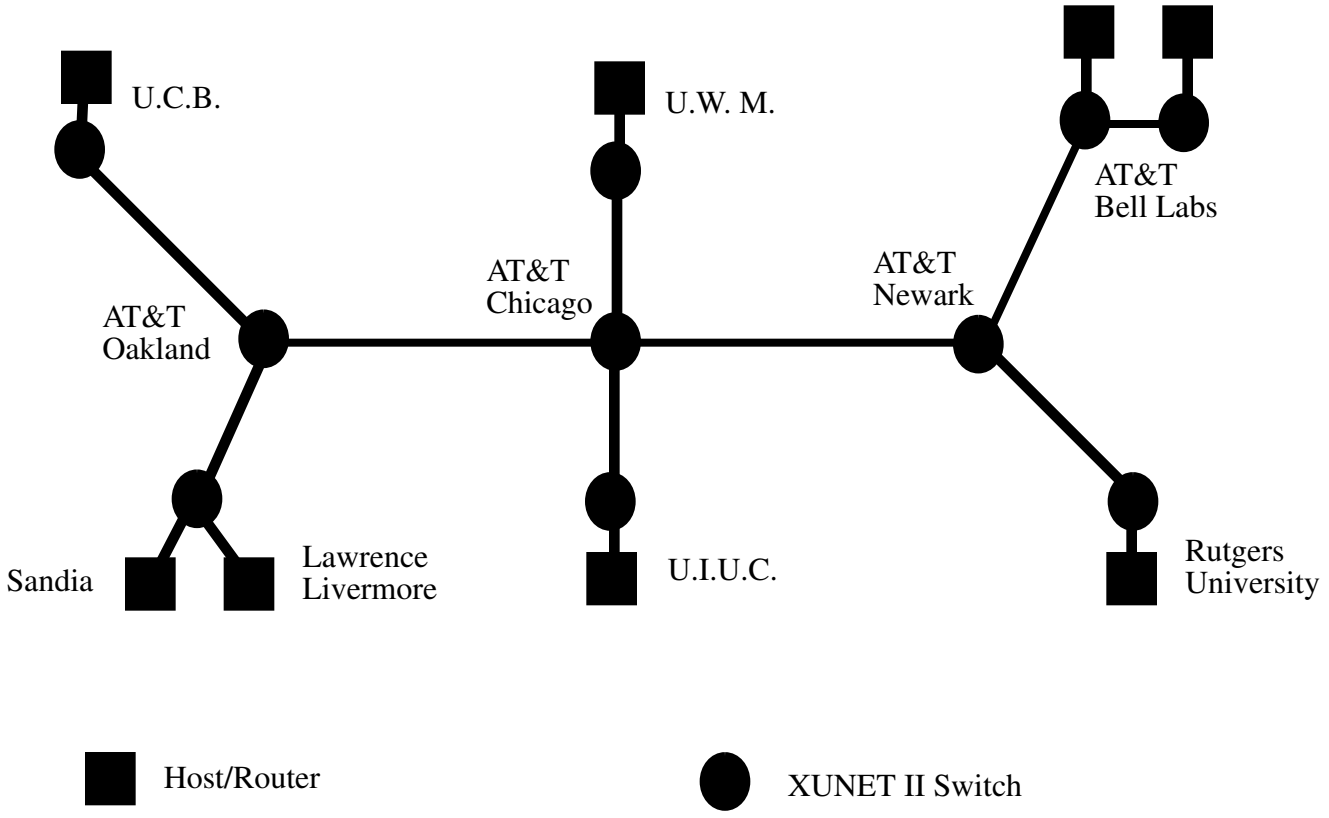


# Implementation




+ centralized control to set prices -> nonlinear optimazation
(Dave Gay)

# Experiments



# Issues

## Implementation

- Timer in the switch needs to be implemented
- Non-linear optimization

## Research

- Find how fast it converges to optimal
- Compare performance with other channel establishment algorithms