

OPTIMAL ROUTING OF CUSTOMERS IN POLLING SYSTEMS

V.G. Kulkarni, University of North Carolina, Chapel Hill, NC 27599, USA, vkulkarn@email.unc.edu

N. Lee, University of North Carolina, Chapel Hill, NC 27599, USA, leent@email.unc.edu

I.J.B.F. Adan, Eindhoven University of Technology, The Netherlands, i.j.b.f.adan@tue.nl

A.A.J. Lefebber, Eindhoven University of Technology, The Netherlands, a.a.j.lefeber@tue.nl

We consider a simple polling system with two stations, no switchover times and exhaustive service discipline. The service times are iid exponential and arrival processes are Poisson. The waiting cost in the station being served is more than the waiting cost in the station that is not being served. When a customer arrives, he is routed to one of the two stations, based on the queue-lengths at the two stations and the position of the server. We consider both the individually optimal and socially optimal policies minimize the expected waiting costs. We consider fluid model approximation to derive the socially optimal costs and derive linear switching curve policies.