Implementation and Optimization of AODV for Internet Connectivity

Bingying Cai*, Huimei Lu*, Yong Xiang**, Weitao Wang*, Jingbang Wu *, Rui Gao *

** School of Computer Science, Beijing Institute of Technology, Haidian District, Beijing, China*

***Department of Computer Science and Technology, Tsinghua University, Haidian District, Beijing, China*

cbying@bit.edu.cn, luhuimei@bit.edu.cn, xyong@mail.tsinghua.edu.cn,

wwtao@bit.edu.cn, wjbang@bit.edu.cn, grui@bit.edu.cn

***Abstract*—The popular method for MANET to access the Internet is choosing some gateways through which MANET can act as a subnet of the Internet. In these solutions, gateways will be the bottleneck of the whole network. Meanwhile, gateway selection and handoff are also the problems. Since aforesaid problems, a new protocol was implemented on embedded devices based on iAODV, and route optimization and link failure repair were proposed and implemented for a further step. The interconnected protocol introduced interconnected node (ICN) and wired node (WDN), and was compatible with multiple network interfaces. To access the Internet, the interconnected protocol routed ICN , WDN and WLN（wireless node） as peers. Experimental results show that in the presence of ICNs and WDNs, the new protocol has higher overall network bandwidth and better data transfer stability than AODV. When the network topology changes frequently, it tries to find a better path by route optimization, and detect or repair the link broken timely by link failure repair. In traditional MANET in which all nodes are wireless, the interconnected protocol has a similar performance to AODV.**

***Keyword*—MANET, AODV, Connectivity for Internet, Multi-interface routing, Gateway**

Bingying Cai received B.S in Beijing Institute of Technology in 2013. She is currently working toward a M.S degree in Beijing Institute of technology. Her research interest is ad hoc networks.

Huimei Lu is an associate professor of Beijing Institute of Technology. She received Ph.D. from Tsinghua University. Her research interest includes delay tolerant networks, multicast routing.

Yong Xiang is an associate professor of Tsinghua University. He received Ph.D. from Tsinghua University, M.S. and B.S. from Beijing Normal University. His research interest includes CSCW, ad hoc networks and operating system.

Weitao Wang received B.S in Hebei University of Technology in 2013. He is currently working toward a M.S degree in Beijing Institute of technology. His research interest is delay tolerant networks.

Jingbang Wu received M.S. in Beijing Institute of Technology in 2014, B.S in Xiangtan University in 2011. He is currently working toward a Ph.D degree in Beijing Institute of technology. His research interest is ad hoc networks.

Rui Gao received B.S. in Liaoning University in 2015. She is currently working toward a M.S. degree in Beijing Institute of technology.