Southern Illinois University System

Applications
- Computer networking
- Network routing protocol

Inventors

Bidyut Gupta, PhD
Dr. Gupta is a professor of computer science at SIU Carbondale.

Sindoora Koneru, PhD
Dr. Koneru earned her PhD in computer science from SIU Carbondale in 2014.

Shahram Rahimi, PhD
Dr. Rahimi is a professor of computer science at Mississippi State University where he also serves as head of the department.

Contact

Daniel Ashbaugh, JD
Technology Transfer Specialist
dashbaugh@siu.edu
618-453-4554

Multicast Routing Protocol for Computer Networks

Multicasting in computer networks involves communication among a group of users where formation of the group is based on the particular interest of its members. One of the most widely used protocols in multicast networks is Distance Vector Multicast Routing Protocol (DVMRP), which uses the distance-vector routing (DVR) information from the routers of its users. Distance-vector routing information includes the "direction," which usually means the next hop address, and "distance," which is a measure of the cost to reach a certain node. The cost of reaching a destination is calculated using various route metrics and updated to the router's routing table. All or part of a router's routing table is periodically sent to all the router's neighbors that are configured to use the same distance-vector routing protocol. For the proper implementation of DVMRP, the router generates a very large number of control packets, known as prune packets. Creating these prune packets consumes a considerable amount of network bandwidth resulting in slower traffic movement in the networks causing delay in communication so there is a need to drastically reduce the number of prune packets.

Invention

SIU researchers have developed a novel technology for use in distance vector multicast routing. The technology offers a new interpretation of the routing information stored in a DVMRP routing table related to the locations of a multicast source router and the routers connected to hosts with group members in a DVMRP domain. The methodology exploits this knowledge to create two conditional packet forwarding checks, based on pseudo-diameter and super-pseudo-diameter checks, respectively, and uses these conditions to extend the two phases of the existing DVMRP to improve its performance by allowing a better utilization of bandwidth.

Key Advantages
- Greatly decreases required bandwidth
- Uses existing hardware
- Easily implemented through existing DVMRP

Status

U.S. patent #9,461,832 was issued on October 4, 2016. The technology is available for license.

Other opportunities related to this technology, included but not limited to sponsored and/or collaborative research, may be available. Please reach out to the designated contact identified at left for more information.