

**ON USING DUAL INTERFACES WITH NETWORK
CODING FOR
DELIVERY DELAY REDUCTION**

MICANS INFOTECH

ABSTRACT

- This paper considers a heterogeneous network architecture wherein devices use two wireless interfaces to receive packets from the base station and to transmit or receive packets from other devices concurrently.
- For such network architecture, this paper focuses on time-critical and order-constrained applications that require quick and reliable in-order decoding of the packets. The paper first introduces the dual delivery delay as a measure of degradation compared to the optimal in-order packet delivery to the devices. It then addresses the minimum delivery delay problem using instantly decodable network coding (IDNC).

MICANS INTERTECH



CONT...

- In particular, the dual interface IDNC graph is constructed to represent all feasible coding opportunities and conflict-free transmissions. Subsequently, the minimum delivery delay problem is shown to be equivalent to a maximum weight independent set selection problem over the dual interface IDNC graph.
- Simulation results demonstrate that the proposed IDNC algorithm effectively reduces the delivery delay as compared to the existing network coding algorithms. Especially, for a layered video transmission, the proposed solution provides a sequential delivering of video layers to individual devices.



EXISTING SYSTEM

- A body of works in the literature adopts IDNC for various applications and network settings. In particular, the authors develop an IDNC framework that reduces the number of time slots required for broadcasting a set of packets.
- On the other hand, consider time-critical and order-constrained applications and propose IDNC algorithms for in-order packet delivery to the devices.

MICANS INFOTECH



PROPOSED SYSTEM

- This paper is interested in time critical and order constrained applications over a heterogeneous network for which it introduces a dual delivery delay metric that measures the degradation as compared to the optimal in-order packet delivery to each device.
- The paper's main contribution is to provide a graph theoretic solution to optimally solve the minimum delivery delay problem in IDNC systems. In particular, the paper introduces a dual interface IDNC (DI-IDNC) graph, where each vertex represents a possibility for a transmitting device to send a new packet to another receiving device, and an edge represents a coding or simultaneous transmission conflict.



HARDWARE REQUIREMENTS

- Processor - Pentium-IV
- Speed - 1.1 Ghz
- RAM - 256MB(min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

MICANS INFOTECH



SOFTWARE REQUIREMENTS

- Tool - Network Simulator-2
- Operating system - LINUX
- Front end - OTCL (Object Oriented Tool Command Language)

MICANS INVENTECH



REFERENCES

- [1] H. Khamfroush, P. Pahlevani, D. E. Lucani, M. Hundeboll, and F. H. Fitzek, “On the coded packet relay network in the presence of neighbors: Benefits of speaking in a crowded room,” in Proc. of IEEE International Conference on Communications (ICC’ 2014), Sydney, Australia, 2014, pp. 1928–1933.
- [2] N. J. Hernandez Marcano, J. Heide, D. E. Lucani, and F. H. Fitzek, “On the throughput and energy benefits of network coded cooperation,” in Proc. of IEEE 3rd International Conference on Cloud Networking (CloudNet’ 2014), Luxembourg, 2014, pp. 138–142.

