Diversity Coding in Two-Connected Networks

ABSTRACT

In this paper, we propose a new proactive recover scheme against single edge failures for unicast connections in transport networks. The new scheme is a generalization of diversity coding where the source data AB are split into two parts A and B and three data flows A, B, and their exclusive OR (XOR) A⊕B are sent along the network between the source and the destination node of the connection. By ensuring that two data flows out of the three always operate even if a single edge fails, the source data can be instantaneously recovered at the destination node.

CONT…

- In contrast with diversity coding, we do not require the three data flows to be routed along three disjoint paths; however, in our scheme, a data flow is allowed to split into two parallel segments and later merge back. Thus, our generalized diversity coding (GDC) scheme can be used in sparse but still two-connected network topologies.
- Our proof improves an earlier result of network coding, by using purely graph theoretical tool set instead of algebraic argument. In particular, we show that when the source data are divided into two parts, robust intra-session network coding against single edge failures is always possible without any in-network algebraic operation.

EXISTING SYSTEM

- Most of these works assume that a matrix of traffic demands are given in advance inter-session network coding can be applied on the data of different connections. However, recent transport network trends point towards that connection demands are arriving one after another without any knowledge of future incoming requests.
- Thus, in these dynamic environments intrasession network coding is needed for unicast connections, where coding is performed on different parts of the same source data.

PROPOSED SYSTEM

General Dedicated Protection with Network Coding (GDP-NC) was proposed, which made a step closer to get a practical approach in transport networks by limiting the number of data parts to two; however, for the price of an NP-hard optimization problem to obtain the minimal capacity coding graph against multiple failures. However, for the special case of single edge failures polynomial-time capacity allocation algorithm exists.

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

SOFTWARE REQUIREMENTS

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

REFERENCES

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