CS 856 Paper Reviews
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November 3, 2004

Paper Title: Informed Content Delivery
Section I. Overview

A. Reader Interest

1. Which category describes this paper?

( ) Practice / Application / Case Study / Experience Report
(X) Research / Technology
( ) Survey / Tutorial / How-To

2. How relevant is this paper to the readers in the area? Please explain your rating under III. Detailed Comments.

( ) Very Relevant
(X) Relevant
( ) Interesting - but not very relevant
( ) Irrelevant

B. Content

1. Please explain how this paper advances this field of research and / or contributes something new to the literature. Please explain your answer under III. Detailed Comments.

2. Is the paper technically sound? Please explain your answer under III. Detailed Comments.

( ) Yes
(X) Appears to be - but didn't check completely
( ) Partially
( ) No

C. Presentation

1. Are the title, abstract, and keywords appropriate? Please explain your answer under III. Detailed Comments.

(X) Yes
( ) No

2. Does the paper contain sufficient and appropriate references? Please explain your answer under III. Detailed Comments.

(X) References are sufficient and appropriate
( ) Important references are missing; more references are needed
( ) Number of references are excessive

3. Does the introduction state the objectives of the paper in terms that encourage the reader to read on? Please explain your answer under III. Detailed Comments.

( ) Yes
(X) Could be improved
( ) No

4. How would you rate the organization of the paper? Is it focused? Is the length appropriate for the topic? Please explain your answer under III. Detailed Comments.

(X) Satisfactory
( ) Could be improved
( ) Poor

5. Please rate and comment on the readability of this paper.
Please explain your answer under III. Detailed Comments.

( ) Easy to read
( ) Readable - but requires some effort to understand
(X) Difficult to read and understand
( ) Unreadable

Section II. Summary and evaluation

A. Summary (provide here a summary of the paper)

This paper begins with a discussion of the problem of optimizing transfers of files in a peer overlay using a tree-structured multicast. The benefits and drawbacks of this approach are explained using examples. The authors then provide a discussion of the challenges their scheme will face in practice. The authors begin to discuss the benefits and drawbacks of the encoding method that they have developed.

The authors next present some methods of determining which data that they have could be of use to other peers (i.e. the working data set). This involves a comparison of the data segments at the two sites. However, the authors suggest a random sampling approach to determine which pieces may be of use. The algorithm then performs a set difference to determine exactly which segments are useful from another site. The most efficient means of performing this difference makes use of symbol recoding using bloom filters. Under this scheme, the authors' performance analysis states that it is most efficient out of five methods for determining segment set difference.

B. Evaluation

Please rate the paper. Please explain your answer under III Detailed Comments.

( ) Award Quality
( ) Excellent
(X) Good
( ) Fair
( ) Poor

Section III. Detailed Comments

This paper is relevant to the area of content delivery using overlay networks. It advances the field by providing a method of transferring data between hosts who have partially downloaded a file in a more efficient manner. This paper appears to be

technically sound. However, it is so difficult to understand that the reader could not be sure it is sound.

I do not believe that the title and abstract are appropriate for this paper. Neither gives an accurate description of the contents of the paper. The abstract also contains very little background information, but more of a philosophical debate about the problem. Also, no keywords were provided at all. The introduction does provide some information about the problem and proposed solution, but again, is very difficult to read. Accurate and complete references are given.

The paper appears to be well organized. The information presented is contained in appropriate subsections. However, I do not believe this paper is very well written. The reader had to reread many sections three and four times in order to gain an accurate understanding of the information. Thus, the authors should take care to ensure that material is presented at a level more appropriate for all readers. That being said, I was impressed with the survey of related work and the impressive performance evaluation. I do believe that the authors have performed fantastic background research and presented it well. Also, a very thorough performance evaluation is always useful.

Paper Title: Resilient Overlay Networks

Section I. Overview

A. Reader Interest

1. Which category describes this paper?

( ) Practice / Application / Case Study / Experience Report
(X) Research / Technology
( ) Survey / Tutorial / How-To

2. How relevant is this paper to the readers in the area? Please explain your rating under III. Detailed Comments.

( ) Very Relevant
(X) Relevant
( ) Interesting - but not very relevant
( ) Irrelevant

B. Content

1. Please explain how this paper advances this field of research and / or contributes something new to the literature. Please explain your answer under III. Detailed Comments.

2. Is the paper technically sound? Please explain your answer under III. Detailed Comments.

(X) Yes
( ) Appears to be - but didn't check completely
( ) Partially
( ) No

C. Presentation

1. Are the title, abstract, and keywords appropriate? Please explain your answer under III. Detailed Comments.

(X) Yes
( ) No

2. Does the paper contain sufficient and appropriate references? Please explain your answer under III. Detailed Comments.

(X) References are sufficient and appropriate
( ) Important references are missing; more references are needed
( ) Number of references are excessive

3. Does the introduction state the objectives of the paper in terms that encourage the reader to read on? Please explain your answer under III. Detailed Comments.

(X) Yes
( ) Could be improved
( ) No

4. How would you rate the organization of the paper? Is it focused? Is the length appropriate for the topic? Please explain your answer under III. Detailed Comments.

(X) Satisfactory
( ) Could be improved
( ) Poor

5. Please rate and comment on the readability of this paper.
Please explain your answer under III. Detailed Comments.

(X) Easy to read
( ) Readable - but requires some effort to understand
( ) Difficult to read and understand
( ) Unreadable

Section II. Summary and evaluation

A. Summary (provide here a summary of the paper)

This paper presents RON: the Resilient Overlay Network. To the authors' knowledge, RON is the first overlay algorithm that can repair broken or poorly performing links by rerouting traffic in seconds as opposed to minutes or hours. The paper begins with a quick introduction to RON as well as some performance data. The authors then present a comprehensive review of other such systems, as well as discussion of how they relate to RON.

The authors next present their three design goals: fast failure detection and recovery, application-integrated path selection and routing, and expressive policy routing. A discussion of the primitives that applications use to route messages around a RON is discussed, as well as an overview of the components of the system. An implementation section provides some implementation details as well as an algorithm for determining a node's routing table entries.

The authors conclude with a lengthy discussion of performance results, as well as some summary remarks.

B. Evaluation

Please rate the paper. Please explain your answer under III Detailed Comments.

( ) Award Quality
(X) Excellent
( ) Good
( ) Fair
( ) Poor

Section III. Detailed Comments

This paper presents resilient overlay networks. The abstract and title both provide background information about the project to be presented. However, keywords are missing that would aid the reader in finding the paper with keyword searches. The introduction provides background information and a quick summary of the goals of the project. This encourages the reader to read further in order to confirm the introductory information, and learn more.

This paper is relevant to those working in the field of overlay networks and routing protocols. It advances the field by proposing a system to manage overlay routing at the node level instead of at the router level. This allows more accurate routing based on links between nodes instead of between autonomous systems.

This paper is well organized with complete and thorough references. However, some care should have been taken when proofreading the paper, as there are several typos and missing characters. Nevertheless, in general, the paper is very well written and easy to understand.

The presented concepts appear to be technically sound. However, the authors leave several questions unanswered:

-How well does your implementation scale? It seems to the reader that $O(n^2)$ traffic doesn't scale well at all! Are there optimizations you can make to allow more nodes to take part in a network?
-Isn't flooding your table entries a bad idea for traffic volume? Can you use some type of superpeer routing mechanism to make sending table entries more efficient?
-How well do RON nodes map to the physical topology? Do they make better use of the topology than typical TCP connections?
-How do guaranteed delivery applications make use of RON's if RON's have unreliable delivery? Is that up to the implementing application?
-What happens if a link goes down after the entry RON node has tagged the message to use that link?

Overall, this article is excellent. However, some missing information and formatting errors preclude it from being award-winning.