Technical Research Papers

What are...?

Why...?

How can ...?

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ORIGINAL

POINT OF VIEW

Something happened? (***Discovery, Invention***)

You've done it –Yes

Who knows about it – Me , Friends, Mentor…

Who else knows about it - ?? Guess no one

Categories

- Original Research Papers
- Survey Papers

Research Papers

- Describe novel technical results
  - An algorithm
  - System Construct : Hardware Design, Software System, Protocol
  - A performance evaluation – analysis, simulation, measurement
  - A theory – collection of theorems

Research Papers

- Should focus on
  - Results should be described sufficiently so that their validity can be established.
  - Novel aspects should be identified
  - Significance of results should be identified : Improvements and impacts

Technical Research Papers

Paper Structure

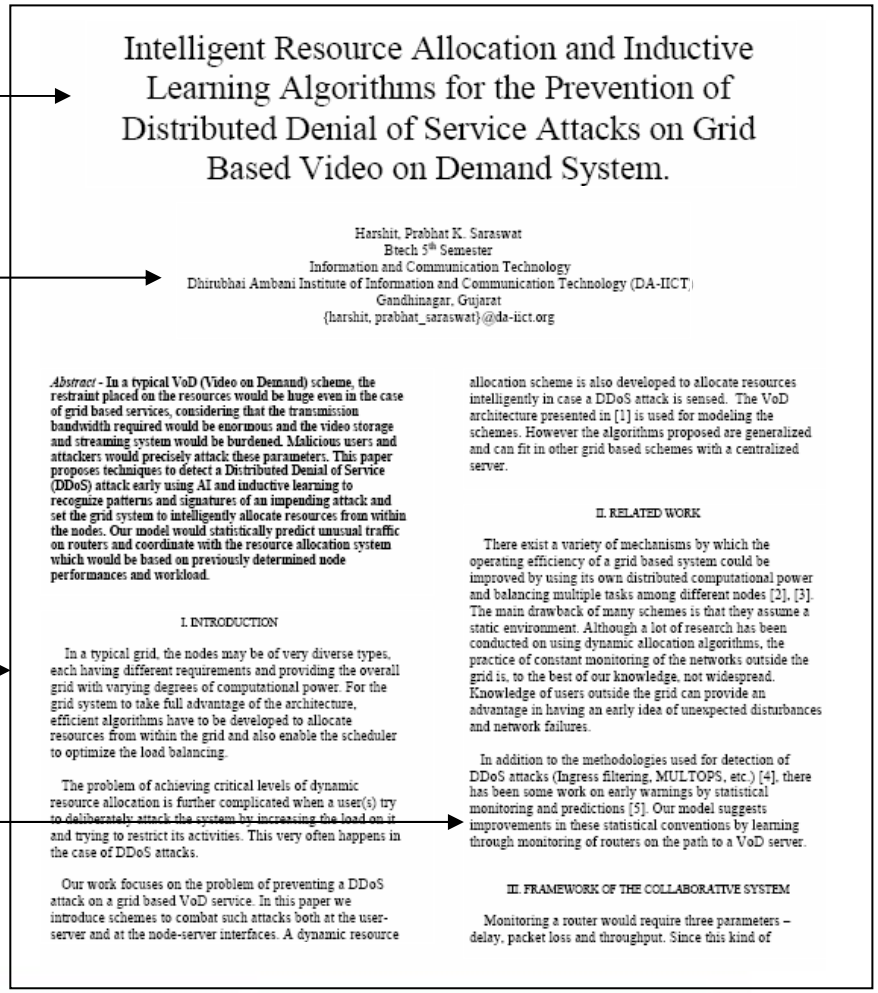
Title

Author's name(s) and affiliations

Abstract

Introduction

Related work



Intelligent Resource Allocation and Inductive Learning Algorithms for the Prevention of Distributed Denial of Service Attacks on Grid Based Video on Demand System.

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Abstract - **In a typical VoD (Video on Demand) scheme, the restraint placed on the resources would be huge even in the case of grid based services, considering that the transmission bandwidth required would be enormous and the video storage and streaming system would be burdened. Malicious users and attackers would precisely attack these parameters. This paper proposes techniques to detect a Distributed Denial of Service (DDoS) attack early using AI and inductive learning to recognize patterns and signatures of an impending attack and set the grid system to intelligently allocate resources from within the nodes. Our model would statistically predict unusual traffic on routers and coordinate with the resource allocation system which would be based on previously determined node performances and workload.**

I. INTRODUCTION

In a typical grid, the nodes may be of very diverse types, each having different requirements and providing the overall grid with varying degrees of computational power. For the grid system to take full advantage of the architecture, efficient algorithms have to be developed to allocate resources from within the grid and also enable the scheduler to optimize the load balancing.

The problem of achieving critical levels of dynamic resource allocation is further complicated when a user(s) try to deliberately attack the system by increasing the load on it and trying to restrict its activities. This very often happens in the case of DDoS attacks.

Our work focuses on the problem of preventing a DDoS attack on a grid based VoD service. In this paper we introduce schemes to combat such attacks both at the user-server and at the node-server interfaces. A dynamic resource allocation scheme is also developed to allocate resources intelligently in case a DDoS attack is sensed. The VoD architecture presented in [1] is used for modeling the schemes. However the algorithms proposed are generalized and can fit in other grid based schemes with a centralized server.

II. RELATED WORK

There exist a variety of mechanisms by which the operating efficiency of a grid based system could be improved by using its own distributed computational power and balancing multiple tasks among different nodes [2], [3]. The main drawback of many schemes is that they assume a static environment. Although a lot of research has been conducted on using dynamic allocation algorithms, the practice of constant monitoring of the networks outside the grid is, to the best of our knowledge, not widespread. Knowledge of users outside the grid can provide an advantage in having an early idea of unexpected disturbances and network failures.

In addition to the methodologies used for detection of DDoS attacks (Ingress filtering, MULTOPS, etc.) [4], there has been some work on early warnings by statistical monitoring and predictions [5]. Our model suggests improvements in these statistical conventions by learning through monitoring of routers on the path to a VoD server.

III. FRAMEWORK OF THE COLLABORATIVE SYSTEM

Monitoring a router would require three parameters – delay, packet loss and throughput. Since this kind of

Paper Structure

- Title
  - Avoid all but the most readily understood abbreviations.
  - Avoid common phrases like "novel" etc.
  - Use adjectives that describe the distinctive features of your work, e.g., reliable, scalable, high-performance, robust, low-complexity, or low-cost.
  - Consult Automatic Systems Research Topic or Paper Title Generator.

Paper Structure

- Abstract
  - 200 words approx
  - A summary of the paper, including a brief description of the problem, the solution, and conclusions.
  - Do not cite references in the abstract.

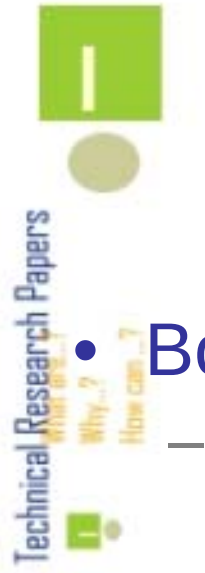
- Keywords
  - They should be selected such that a computerized search is facilitated.

Paper Structure

- Introduction
  - Introduce problem
  - Outline solution
  - The statement of the problem should include a clear statement why the problem is important (or interesting).
  - The proposed solution should be briefly described, with explanations of how it is different from, and superior to, existing solutions.
  - The last paragraph should be a summary of what will be described in each subsequent section of the paper.

Paper Structure

- Related Work
  - This should contain the background of the problem, why it is important, and what others have done to solve this problem.
  - All related existing work should be properly described and referenced.



Paper Structure

- Body of paper
  - Problem Solution / System model
    - The proposed model is described. Assumptions??
    - State the model assumptions clearly. Do the assumptions make sense?
    - Even if assumptions to make the problem mathematically tractable, they should reflect some real-world situations.
    - Instances where the assumptions hold should be described.
    - Use figures to help explain the model.

Paper Structure

- Body of paper
  - Sufficient motivation, example scenarios,
  - Example scenarios with Illustrating figures.
  - General evaluations of your algorithm or architecture, e.g., material proving that the algorithm is O(log N), go here, not in the evaluation section.
  - *Realization*: contains actual implementation details when implementing architecture isn't totally straightforward. Mention briefly implementation language, platform, location, dependencies on other packages and minimum resource usage if pertinent.

Paper Structure

- Conclusions
  - This summarizes what have been done and concluded based on the results.
  - A description of future research should also be included

- References
  - This should contain a list of papers referred to in the paper.
  - Choose a more readily available reference.
  - Research reports, internal memos, private correspondences, and preprints should be avoided.
  - *Often journal editors tend to pick reviewers from the authors of the references cited in the submission.*

Hints and Notes

- Write like a newspaper report, *You saw this, then u saw that.. Then u inference that…*
- Use simple language structures, small sentences.
- Don’t Cheat. *(You will be caught eventually)*
- For each sentence ask yourself, could it be misread? How? What is the best way to fix it?
- If you read what you have written assuming only the knowledge that the reader can be expected to have, does each part work the way you intended?
- If you read it aloud, does it sound the way you intended?

Referee Evaluation Issues

- Will this advance the state of the art?
- Did you learn anything new?
- Does it provide evidence which supports/contradicts hypotheses?
- Experimental validation?
- Will the paper generate discussion at the conference?
- How readable is the paper?
- Is the paper relevant to a broader community?

Survey Paper

A paper that summarizes and organizes recent research results in a novel way that integrates and adds understanding to work in the field.

Survey Paper

A survey paper assumes a general knowledge of the area.

It emphasizes the classification of the existing literature, developing a perspective on the area, and evaluating trends.

Evaluation Criterion

- Thoroughness and scope of survey
- Classification and organization of trends
- Critical evaluation of approaches (relative advantage/disadvantages)
- Quality of explanation (Draw your own figures, diagram, charts)
- Reference and Pointer to depth information

References

- Victor O. K. Li, *"Hints on Writing Technical Papers and Making Presentations",* IEEE TRANSACTIONS ON EDUCATION, VOL. 42, NO. 2, MAY 1999.
- Ron Dusterhoft, Halliburton, and Jim Giddens, *"How To Write Technical Papers and Journal Articles",* Pillars of the Industry Journal

Questions ??

Thanks…

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