A New Efficient Approach to Store Data in a Cloud Server

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Outline

- Introduction
- Problem Statement
- Proposed Approach
- Implementation
- Evaluation
  - Results of Scenario A
  - Results of Scenario B
- Conclusion
- References
Introduction

- Cloud Computing:
  - One of the advanced topics in Computer Science
  - has numerous impact in industry
  - Provide on-demand services
- Three major models of Cloud:
  - Infrastructure as a Service (IaaS)
  - Platform as a Service (PaaS)
  - Software as a Service (SaaS)
- Different Clouds:
  - Private
  - Public
  - Hybrid
Introduction

- Our approach is in Storage as a Service domain

Public Cloud Example
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Problem Statement
Proposed Approach

- Applicable to any text files

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Proposed Approach

- Extract procedure

  1. Bring the original file for user
  2. User highlight some parts of document
  3. Send the edited file to the Cloud for extracting formatting data
  4. Get position of highlighted words
  5. Save in advance
  6. Save the spreadsheet document in user account

- Original File
  - ABCDEFGHIJKLMNOP
  - 123456789
  - abcdefghijklmnopqrstuvwxyz

- Cloud

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Proposed Approach

• Attach procedure

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Implementation

- Implementing required application using Microsoft C#™
- Microsoft C#™ has various libraries for manipulating Microsoft Office™ family file formats
- Choosing Microsoft Word document as Text document
- Choosing Microsoft Excel document as Spreadsheet document
Evaluation

- **Traditional Approach:** 50 users save a common file with 2.5MB size in their account

- **Proposed Approach:** 50 users access a common document file with 2.5MB size and Cloud server save an intermediate file for each user in his/her account
  - Scenario A: the original document will be highlighted in a normal way
  - Scenario B: the entire of the original document will be highlighted
Results of Scenario A (Average-Case)

Table 1:
Comparison of Traditional Approach and Proposed Approach in Average - Case

<table>
<thead>
<tr>
<th></th>
<th>Traditional Approach</th>
<th>Proposed Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original file size</td>
<td>2509 KB</td>
<td></td>
</tr>
<tr>
<td>Total file size for 50 users</td>
<td>125450 KB</td>
<td></td>
</tr>
<tr>
<td>Intermediate file size</td>
<td>22 KB</td>
<td></td>
</tr>
<tr>
<td>Total file size for 50 users</td>
<td>3609 KB</td>
<td></td>
</tr>
</tbody>
</table>
Results of Scenario B (Worst-Case)

Table 2:
Comparison of Traditional Approach and Proposed Approach in Worst - Case
Evaluation

Scenario A (Average – Case)

File Size (KB)

<table>
<thead>
<tr>
<th>Traditional Approach</th>
<th>Proposed Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>125450 KB</td>
<td>3609 KB</td>
</tr>
</tbody>
</table>

Scenario B (Worst – Case)

File Size (KB)

<table>
<thead>
<tr>
<th>Traditional Approach</th>
<th>Proposed Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>125450 KB</td>
<td>24509 KB</td>
</tr>
</tbody>
</table>
Evaluation

- We define efficiency as follows:

\[ \text{Efficiency} = 1 - \left( \frac{\text{PA Result}}{\text{TA Result}} \right) \]

<table>
<thead>
<tr>
<th>Original file size</th>
<th>Efficiency in average-case</th>
<th>Efficiency in worst-case</th>
</tr>
</thead>
<tbody>
<tr>
<td>2509KB</td>
<td>0.971</td>
<td>0.804</td>
</tr>
</tbody>
</table>

Table 3:
Result of Comparison in terms of Efficiency
Conclusion

Using Efficient Approach to Store Data in Cloud

Yields

Saving significant amount of storage

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References


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Thank You