

An Effective Cloud Downloading Service Using Adaptive Mode Selection Algorithm

¹S. Prasanna, ²Dr. B. Shanthini

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Abstract: A traditional model in peer to peer video content downloading over the internet is rapidly growing with respect to the number of users, the intensity of their use, and the diversity of content being accessed. Therefore, it is important to design video content downloading system that effectively scales with respect to both the request rate and the number of available content items. Peer to Peer is the common technique for cloud downloading system. With this approach, none of your co-workers create a video call, and that content is only shared with other co-workers. Therefore, throughput increases mechanically as the population of peer entities increases. Scalability has been a bonus of peer-to-peer feedback, but everyone's request volume has increased, and report overload isn't always guaranteed. In this paper we develop a technique to enhance the downloading time with aid of eye Os and Content Distribution Techniques. And also that system using two philosophies in cloud either as a server or a server to suit it to any of its operating system scenarios. And our Enhanced Automatic Mode Selection algorithm automatically selects the mode compared with bandwidth and cache size.

Keywords: *Peer to Peer Networks, Cloud Downloading, Content Delivery Network, EAMS Algorithm.*

1. Introduction

Downloading video content is very popular in today's world. This has led to an explosion in network usage and video content has become the mainstream of network visitors. The most common method for such places is peer-to-peer. Watching content via peer-to-peer sharing allows people watching a movie together to share the content with other friends. Therefore, bandwidth will steadily increase with population growth. Make scalability a bonus to peer feedback in that all the peer-to-peer energy is that popular videos are shared by many friends, and older friends often provide better pricing stats and better download concurrency. Broadcast. P2P requests for less popular movies often result in lower download prices.

In order to cope with this cloud environment, IOS was used to find a way to enable collaboration and communication between clients. A private cloud service platform that provides a full web-based laptop experience. Consumers first request a video cloud server [1]. The video is divided into special sections have been able to use -ss and -t to reduce input video latency. However, you may need to run more than once if you need to cut the video into multiple output chunks. The split video is saved in the cloud server. P2P content delivery is particularly risk-based, but some customers leave to form peer-to-peer stats pools, where stats are instantly exchanged

between nearby friends. That is, in P2P content delivery structures, the people you make movie calls with also share their content with other friends. As a result, carrier capacity will steadily increase with the increase in peer population, making scalability a reward for peer response. The true power of P2P indicates that a popular video is disbursed, because a popular video shared through some of the peer's closest friends often suggests better statistics and parallelism. But better download, which also leads to better price change stats [2].

In summary, while CDN and P2P generally work well in delivering popular movies, neither of them can provide first-class content delivery support for unpopular movies due to statistics. About low coverage or low price of conversion statistics. To solve this problem, the overall download performance was improved by implementing the cloud download method in the P2P video download structure. Cloud garage utilities are used to cache large amounts of video content and excessive bandwidth is provided to access this cache. P2P communication can connect to cloud upload to greatly improve overall performance.

¹Research Scholar, Department of Computer Science and Engineering, Engineering, St. Peter's Institute of Higher Education and Research, Research, Avadi, Chennai, Tamilnadu, India
Email id: prsjoyanan@gmail.com

²Prof & Head Department of Computer Science and St. Peter's Institute of Higher Education and Avadi, Chennai, Tamilnadu, India
Email id: bshanthini@gmail.com

2. Literature Review

Modern video content material downloads encompass precise modes including Server Mode and Assist Mode, and we advocate the Advanced Auto Mode Selection rule set that robotically switches among modes. Yan et al. focused on using a cloud downloader to offer right content[3] material shipping assist for a famous video thru methods to enhance fee extruderecords and thru methods to use the cloud to make certain make certain whole video records (Huang et al., 2011). In this adaptive scheduling, insurance determines the supply software with inside the video server for the duplicate request task. This is the primary layer for server configuration as a load manipulate procedure.

Peer to see to view overlay [4] networks such as Bit torrent and unique avalanche run on big files to get the general overallperformance and steady shape of server transactions for lots quit users. The principal concept is that files are break up into same lengths to be downloaded thru the person`s media from the server. However, the general overall performance does now no longer reap the excellent cost while in comparison to a unmarried tool and the brand new concept is that the standard overall performance is analyzed basically primarily based totally on the new uplink proportion of broadcast problems. Waves(Mundinger et al., 2008)[5]. RCM is a dependency example that meets P2P storage protection chains. Finding a primary magnificence course for every neighbor is a trouble in RCM for P2P garages. Each neighbor is generally laid low with numerous backup routes that may be used. A binary tree is a easy and generally used tree that may be rented in RCM (Lee and Lee, 2012). With the combination of many sensors, connectivity [6] to the net and strength as their advantages, smartphones have turn out to be a critical supply of multimedia content material and an important records sharing tool. In this demo we intend to clear up the trouble of video streaming in smartphones.

Offering a completely unique approach known as Stream Smart[7], which forwards captured content material to its personalcloud copy, after which forwards it to different comparable copies, makes Stream Smart especially successful fault tolerance,scalability and responsiveness (Gaeta et al., 2013)[8]. This examine record improvement offerings affords access for standard overall performance. This article describes a totally dispensed cache gadget primarily based totally on HDFS. Cacheofferings may be a part of a cache tool designed with three layer get entry to rights. The shared reminiscence shops files loaded from HDFS, which could then be accessed thru the person library (Zhang et al., 2012)[9]. This evaluate affords a hard and fast of self-adaptive load balancing regulations that cope with network traveler problems in P2P

networks. In our rule set, nodes create a binary tree and again up the node tables. The demonstrations display that our rule set can lessen the weight and balance of over speeded network nodes (Xiong et al., 2012)[10].

Detecting complicity is the primary process to preserve records from unauthorized pals. Our examine function styles find out as manypals as feasible even as averting detection errors [11]. The first gadget collects the critiques of all people straightaway even as the second one applies a method to enhance the opportunity of outlier collusion. Test effects for 10% of collaborators display that our rule set efficiently detects all collaborators (Abdullah and Fujita, 2012)[12]. In this article, werecommend a cloud-powered electric powered inexperienced mobileular P2P multimedia streaming architecture. This meetsthe weak point of Wi-Fi to get entry to technologies [13]. Cloud is accountable for the storage and calculates the recorded records. We interpret interactions among cell gadgets as alliance video games, then we manage the most secure chunk healing plan (Jin and Kwok, 2010)[14].

An ordinary tool that makes use of virtual device can't manage the enlargement name to host large-scale digital machines. Therefore, we advocate Liquid, a scalable record deduplication designed typically for large-scale digital gadget deployments to increase standard I/O overall performance thru shops generally accessed records with inside the cache (Zhao et al., 2013)[15]. One manner to fulfill many purchaser wishes is that the usage of a virtual gadget is an adventure. We confront this attempt with Thunder, a modern day VM appliance, and boost up VM picture switch thru incorporated methods of peer-to-peer (P2P) streaming techniques (Zhang et al., 2014)[16]. .

3. Related Work

A. *Peer-to-Peer Network*

A peer-to-peer (P2P) community is a form of decentralized community structure in which community character nodes (referred to as "friends") act as both providers and consumers. Resource. Unlike the client/server version, where the client sends requests to the provider and the server responds to the request, in the peer-to-peer version each node in the peer community can act as both a client and a server. If two computer systems are different and play similar roles, they are friends of memory. In peer-to-peer communities, tasks (including searching for documents or streaming audio/video) are shared between connected friends, each creating a portion of a resource. (Along with processing power, desktop garage and community bandwidth) without delay. Diverse members of a community that do not require centralized coordination via a server. Once a connection is established, each node can request its own transmit

document. Documents from P2P communities can be sent in several ways. Redirected to a specific IP address or broadcast to all nodes in the community. Typically, peer-to-peer programs allow customers to choose how many contributor connections to search simultaneously and which documents they can share. Some peer-to-peer programs constantly connect to every active node in the community, and people who stop by may not know which computer they are connected to. When a connection is lost in this way, the software permanently opens a new link to another node in the community without interruption.

B. Content Delivery Networks

One of the main strategies used to deliver video content is CDN and peer-to-peer. The peer-to-peer architecture has been improved to handle unpredictable bandwidth, garages, compute and connectivity complexities, and more. Mobile device. After that, a green mechanism for content distribution was proposed in the P2P community, and the content to be distributed is divided into many small blocks. As a result, more creative nodes can reallocate more extra blocks, and far fewer creative nodes can reallocate far fewer blocks. Most of these claims so far are certainly based on peer-to-peer charts. However, there are

generally positive performance issues with this program. Therefore, with the recent emergence of cloud computing, most researchers are trying to apply the concept of cloud to video content distribution. In this article, we've provided great content for unpopular videos using cloud utilities.

C. Cloud downloading Scheme

The principle of uploading to the cloud is as follows. In essence, partners send their video requests to the cloud. Video requests contain record hyperlinks, which can be HTTP/TCP hyperlinks, Bit Torrent hyperlinks. The cloud then downloads the requested video from the recording and stores it in the cloud cache. The cloud then notifies the partner, and the partner can get the requested video (famous or not) from the cloud, usually for a high statistical fee. Any domain at any time. In fact, the cloud no longer wants to notify the peer when a video is requested. Instead, peers actively check download progress and take appropriate action. The main benefit of this approach is that the partner organization does not want to be online all the time, as Cloud Upload uses cloud servers to download the requested video are shown in fig 1.

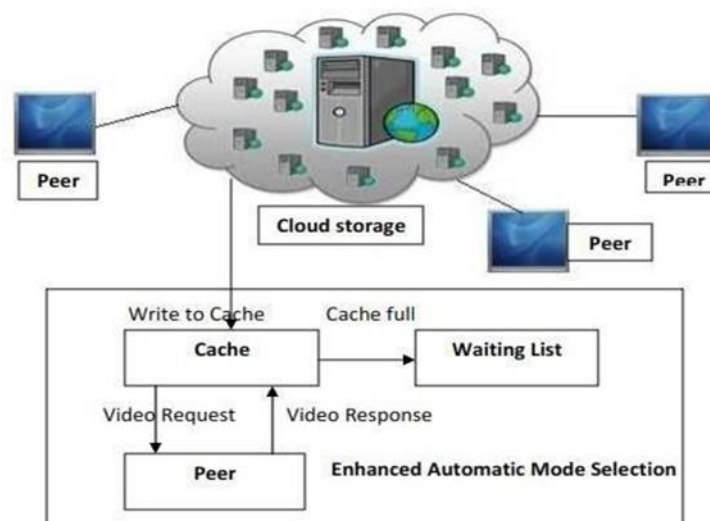


Fig. 1. Cloud Download System.

D. Cloud and Peer-to-Peer Configuration

Cloud computing has computational and sociological implications. From a computing perspective, cloud computing is favored as a subset of distributed computing that uses separate, shared computing resources. For this reason, it has hitherto been defined as a hybrid version of laptop networks, primarily the Internet, while enhancing the capabilities of client/server schemes. The other is to displace hardware and software assets from a sociological perspective and transform cloud computing. The way humans behave when they need to interact with the online cloud rather than the typical offline mode. Colleagues add video to cloud server. The video is divided into special

sections using "ffmpeg". A song is identified by an output number assigned through the content server.

4. Proposed Work

A. Cloud Environment Using Eye OS

A cloud operating system definitely refers to a running machine (or the full interface of a full suite of computing device applications) that lives on the network and there may be times when you need to have your own dedicated cloud operating system. First of all, creating a no-login account with the 1/3rd anniversary cloud os often approaches, wherein you have a limited reporting parking area and all your records are saved on servers of different

people. The percentage of relationships then depends on the number of active customers at any given time. If you need a dedicated web operating system that you can use to manage your data online and create a collaborative environment with your colleagues/partners. Next, let's create a cloud environment to use the Eye operating system. So speeding video downloads are done using cloud downloads with the Eye operating system.

A. Video upload and segmentation

Colleagues add the video explicitly to the cloud server. Videos are cut into special parts. A block is identified by an output number assigned through the content server after splitting. The block integration information encrypted in the meeting report is called a link. This is probably the

main 2D element you need to add. The byte length is the most important thing inside the machine, so choose it correctly. Each peer belongs to an overlay community. All peers know the structure of the community.

C. Multiple cache strategy

The cloud server will have multiple caches to ease the file request process. The cloud server will receive download requests from each peer. The cache allocation strategy is based on the status of each cache. In this proposed system we have defined three cache storages to serve the request. Each cache will have different sets of data's. The datasets will be refreshed from the cloud server periodically. Each cache will have two statuses as either idle or busy are shown in fig 2.

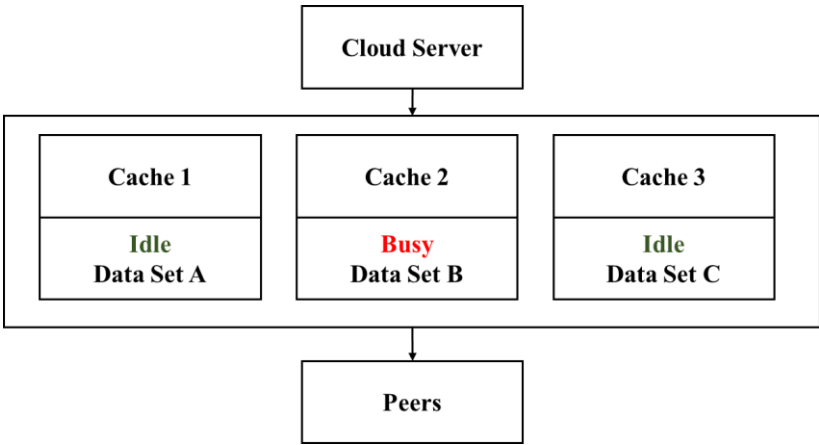


Fig 2: System Architecture

5. Implementation of Enhanced Automated Mode Selection Algorithm

This module describes how to deploy two modes, more precisely server mode and assistant mode, via a cloud server. In addition, an Advanced Adaptive Mode Selection (EAMS) rule set is implemented based solely on mechanical mode switching for server adaptation to the environment and increased throughput. EAMS is the more attractive AMS rule set model implemented in this article. The ability of EAMS to deliver accurate global performance in cloud mode has been fully validated through simulation. EAMS is an adaptive set of rules for selecting a service provider mode (server mode or helper mode). Master mode and server mode have their pros and cons.

The support mode wastes peer-to-peer support as the cloud servers want to keep uploading new content to help your

friends. Even if server mode consumes your blocked friends' bandwidth. The cloud server periodically adjusts the method to select a mode for each video by running the following extended set of automatic mode selection rules: We predict the known charge of L1. Videos in Assistant Mode have a higher priority for coverage in the Cloud Garage. The advantage is that larger friends can contribute more of their storage by upgrading their domain from lending to downloading. Plus, it cuts down on prep time are shown in fig 3. Where, κ is a subset of movies cached via cloud storage. N_i is the number of video j 's peers, U is the complement capacity of the peer, H is the full complement capacity of the cloud server N_i is the expected number of peers to be served over cloud, α_j is the chance that the cloud server can help any peer to search video N_j through the most efficient single bite capture and K is the cache movie variety. C_u refers to Buffers and I recommend multiple cache types.

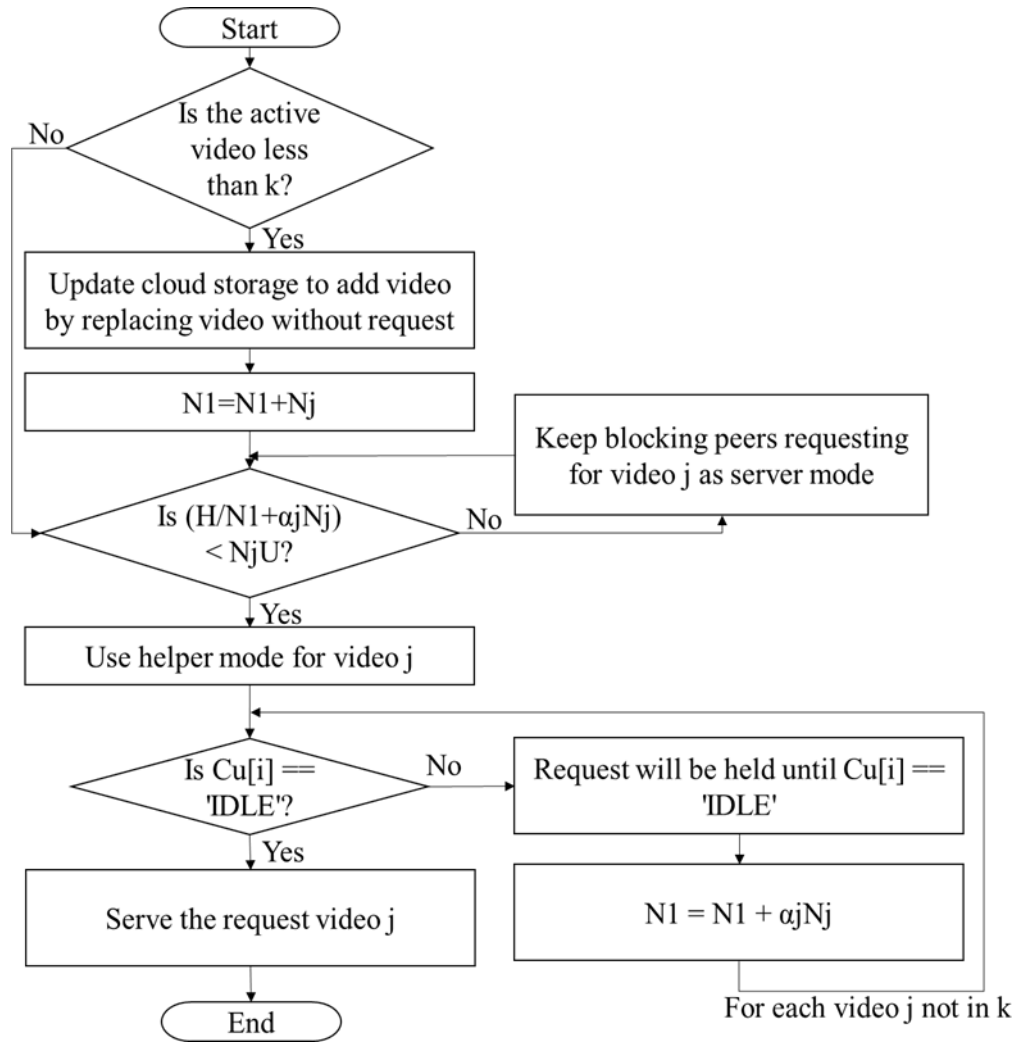


Fig. 3. Flow chart of the proposed EAMS Algorithm

Figure 2 represents the flow chart of the EAMS algorithm, which switches between server mode and helper mode based on the number of peers requesting blocked videos.

6. EAMS Algorithm

For each video j not in κ ,

Do if the active video is less than K then

Update cloud storage to add video by replacing video without request. $N1 = N1 + Nj$

Else

If $(H/N1 + \alpha_j Nj) < Nj U$ then Use helper mode for video j If $(Cu[i] == 'IDLE')$ then

Serve the request video j else $Cu[i] == 'BUSY'$ then

Request will be hold until $Cu[i] == 'IDLE'$

$N1 = N1 + \alpha_j Nj$ Else

Keep blocking peers requesting for video j as server mode End if

End if

7. Results and Discussion

The Adaptive Mesh-based Streaming (AMS) algorithm, Hybrid Proxy-aided Streaming (HPS) algorithm, and Randomized Chunk Selection (RCS) algorithm are compared with the proposed EAMS algorithm in terms of download time for different data speeds of 1, 2, 5, and 10 Mbps as shown in table 1. A sample video with a duration of 5 minutes and a file size of 150 MB is considered for this purpose. Furthermore, assume that the server load and network conditions are ideal.

| Data Speed | AMS algorithm | HPS algorithm | RCS algorithm | Proposed algorithm | EAMS |
|------------|------------------|---------------|---------------|-----------------------|------|
| 1 Mbps | 03:00 | 02:30 | 02:45 | 02:15 | |
| 2 Mbps | 01:30 | 01:15 | 01:20 | 01:00 | |
| 5 Mbps | 00:36 | 00:30 | 00:32 | 00:24 | |
| 10 Mbps | 00:18 | 00:15 | 00:16 | 00:12 | |

Table 1: Comparison of download time of the proposed and existing algorithms

The download time of a video varies based on the available bandwidth (i.e., the speed of the internet connection). Figure 4 and 5 compares the bandwidth and download times for different modes of downloading,

namely, server and P2P, to show which mode is faster under different data speeds, real-time server load as well as network conditions.

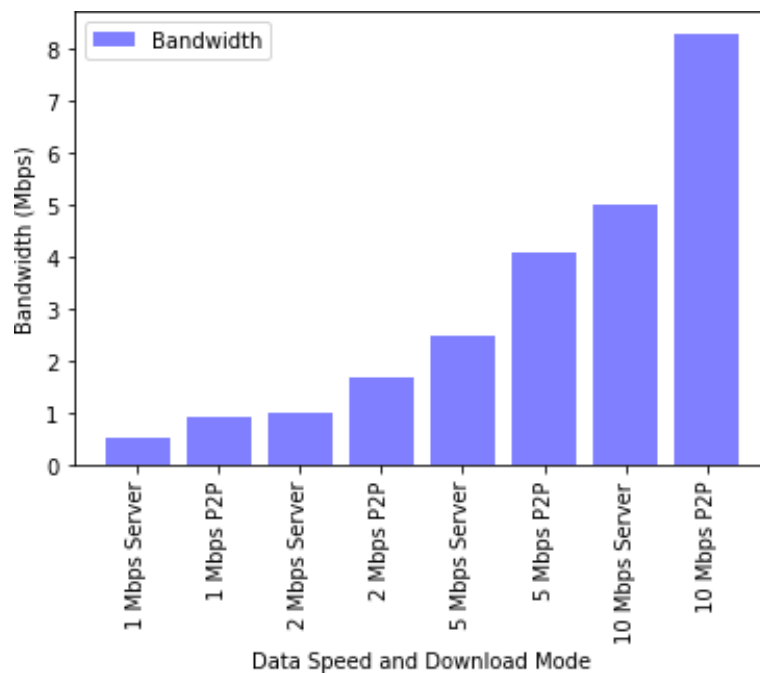


Fig 4: Comparison of Bandwidth for Different Data Speeds and Download

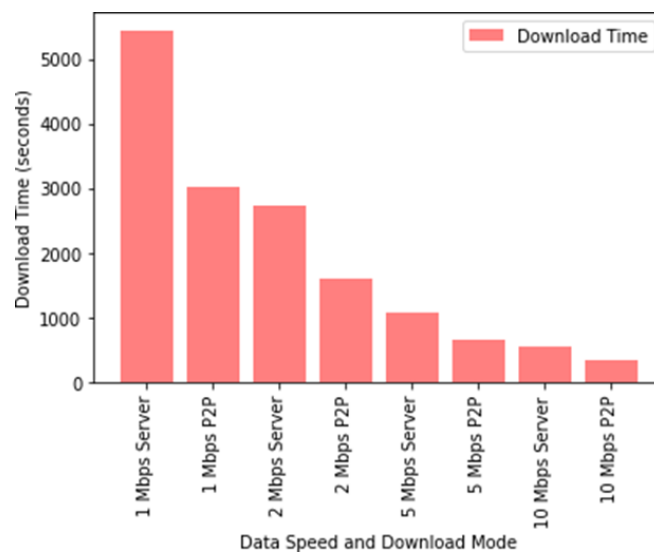


Fig. 5: Download Time for Different Data Speeds and Download

Based on several tests, a combination of peer-to-peer (P2P) and content distribution network (CDN) caching strategies is found to be ideal for this video content downloading system. P2P helps in increasing the scalability and service capacity of the system while distributing the load among peers. However, ensuring fast file downloads is becoming more challenging as the volume of user requests increases. To address this issue,

CDN caching can be employed as a means of distributing video content across a network of servers that are situated in different geographical locations. By doing so, download times can be enhanced, and latency can be reduced. Figure 6 shows the comparison of the download time for buffer caching, proxy caching, adaptive bitrate streaming, and P2P + CDN caching strategy for different video sizes using the proposed EAMS algorithm.

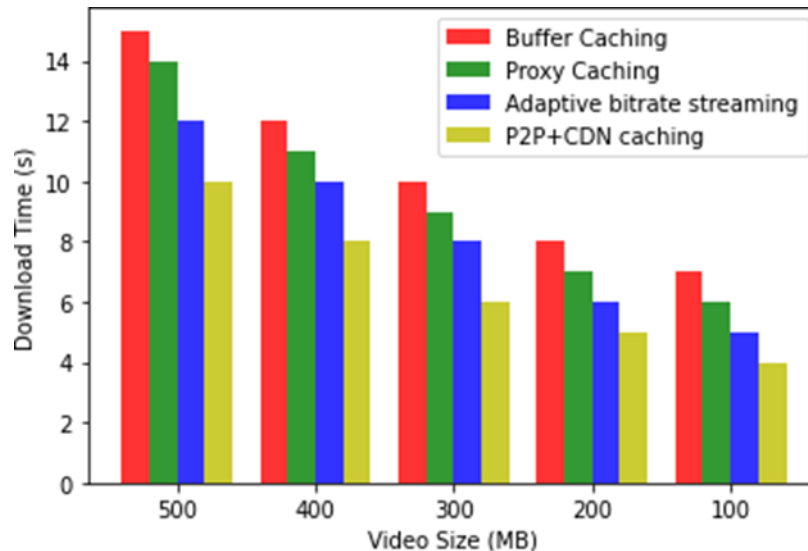


Fig. 6. Comparison of download time by various caching techniques for different video sizes

While using the Automatic Mode Selection algorithm in combination with the EAMS algorithm, over a period of one day, the algorithm selected the server mode 60% of the time and the P2P mode 40% of the time. When compared to the conventional techniques, this method offered the selection of the best mode for every download. In addition, a 100% successful download completion rate is also achieved using the proposed technique for videos of varied sizes.

8. Conclusions

In this paper we discussed various approaches of peer-to-peer cloud based video downloading scheme. Also we discussed server and helper mode based cloud downloading. The existing scenario shows server mode is best to compare helper mode but the number of request to be increased it will occur some collision. In our proposed cloud OS based EAMS algorithm works good even the number of request is high and also it achieves high speed downloading by enabling the system to make concurrent video request at a time. Comparing our existing the result of EAMS to make good performance in different operating regimes was validated by simulation and the efficiency of the system is also increased.

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