



Improving Video Streaming Quality and Network Efficiency through Data Distribution Services

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Abstract

Lately, handling big data has become challenging due to its large size and complexity. To address scalability, availability, real-time performance, flexibility, and various Quality of Service (QoS) characteristics, Data Distribution Services (DDS) middleware offers extensive integration with mission-critical, real-time, and high-performance networks. Unlike traditional client-server communication models, Data Distribution Services rely on a publish/subscribe communication model. DDS enhances the quality of video streaming through its efficient data delivery approach. On internet protocols, a significant portion of traffic is generated by content delivery applications, such as video streaming. This study examines how Data Distribution Services are well suited for streaming real-time, full-motion videos over communication networks. Several experimental studies have been conducted to compare video streaming using a VLC player with an overlay of Data Distribution Services. Our application-aware routing system enables mobile network operators to utilize their networks more efficiently, allows service providers to improve customer satisfaction, and ensures end-users experience desirable service quality across various network applications. The findings of this study demonstrate the efficiency of DDS in delivering high-quality video streams while utilizing low network bandwidth. Additionally, the results highlight that DDS offers greater flexibility and scalability, making it a highly important technology for video distribution over internet protocol networks. It achieves this by using narrower bandwidth while maintaining high-quality video stream delivery.

Keywords: Quality of Service; Object Management Group; Video Streaming Support; Electronic-learning; Middleware

1. Introduction

The applications of video streaming are growing rapidly, requirements for a lot of business. Video streaming applications involve, for instance, commercial applications like a stored-video streaming, video conferencing as well as electronic-learning in addition to certain military applications like video surveillance that is related to certain object or target field. The traffic of video is considered resource intensive, also it is consuming many network bandwidths [1], thus, it is an obstacle to stream videos over networks of limited-bandwidth, for instance, Bluetooth or wireless sensor network. With regard to many conditions, using bandwidth implying direct costs on the end-users. In the presented study, there is an attempt to improve the experience of end-users with regard to costs and quality, via using middleware of data distributed Services.

Data distributed service can be considered as set related to certain specifications which are standardized through Object Management Group (OMG). Middleware of data distributed services can be defined as recognized standard which have built-in data-structure as well as certain attributes defined through meta- information referred to as topics. Each one of the topics will be describing set of related samples of data with comparable data property and data structure, e.g., topic referred to as “temperature” could be utilized for storing temperature samples which have been monitored through distributed group of sensors [1][2].

A.state of affairs one: purpose to purpose CMBR Communication With anAdditive mathematician supply Noise This state of affairs is meant by design to high lightweight the results into the signal noise and linterference quantitative relation (SNIR) on the service offered to the layers 3 , higher than. Specifically we will examine the spherical Time Trip (RTT) and therefore the Frame Error quantitative relation (FER) at the waterproof layer. During this context, we tend to started 2 iee 802.11 nodes. Associate access purpose (AP) and a station station (STA).

They are distant from a pair of meters. The access purpose generates continuing bit rate UDP traffic toward the station. We tend to set up a mathematician supply noise that solely perturbs the station (UDP destination), associated so creates an uneven link between the 2 nodes. The state of affairs are often, 4 every time step, the UDP supply generates ten thousand packets at periodic intervals and underneath a continuing power spectral density (PSD) of white noise. Since the info length is mounted for our experiment, the interval is set by the UDP information measure that are severally seven Mbps, ten Mbps and fifteen Mbps. relating to the

PSD, we tend to 1st established the many vary of values that were counting on the atmosphere (see next section) and tested them each zero.25 dBm. The state of affairs one results in variety of sixty mixtures of parameter values, it illustrated infigure one.

B-Situation a pair of: synchronic Access of CMBR Sources in FreeSpace Propagation

This situation has been chosen to be out of any hidden terminal concerns and alternative specific cases of WiFi experiments. We are going to examine equivalent effects than for the situation one except that the SNIR is especially created by the interference of 1 station on the others. During his configuration, the access purpose is associate degree UDP sink, that receives 2 CMBR UDP flows, one from every station. Every experiment lasts for60s. Throughout the primary twenty seconds the first supply is transmittal alone, and then the second supply is started and finishes alone forth twenty last seconds. The abstraction configuration of the situation is illustrated in figure a pair of, since there's no geometrical symmetry, we derived 2 sub-cases. Within the 1st one, the flow of the station one starts before the flow of the other, the second case is that the contrary. We have been tested these 2 sub-cases fordifferent UDP bandwidths for every station with the values7 Mbps, ten Mbps and fifteen Mbps. The situation a pair of results in variety of eighteen combos of parameter values, it's illustrated in figure.

Entities, which are writing and reading the samples of data with the use of DDS-based middleware, are defined as publishers in addition to subscribers. Publisher contains set of data writer modules,an every one of those is applied for the sake of writing information on specific topic.At the same time, subscriber will read the topic's data samples with the use of data reader modules.Topic has been qualified through general set regarding [2].

For example, "life span" Quality of Services parameter will be computing the highest time that the sample of data could stay in the system from the time regarding writing's inception. The "history" QoS will be specifying the highest number regarding samples of data, which could be stored in middleware; in the case when reaching such highest number, newest sample of data will be substituting the oldest one. In the case when samples of data on specific topic are required via application, it will be easily feed Data Distributed Service interface with the topic's name.DDS middleware carry out the setup related to underlying networking resources with regard to the data delivery [2].

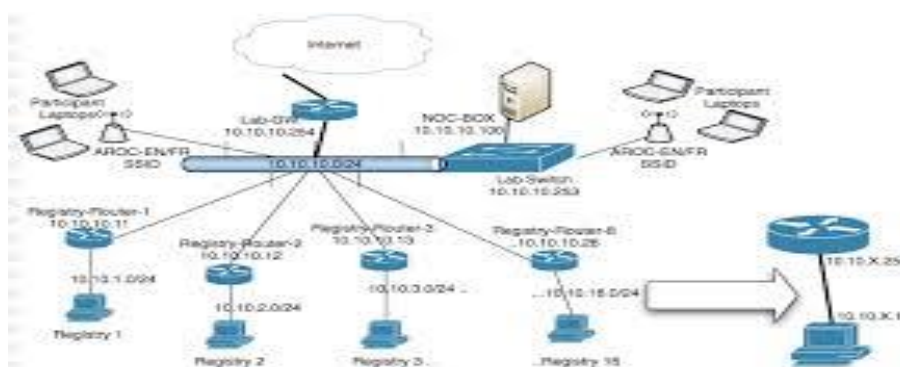


Figure 1. A client server model

Such buffering function that is related to the history QoS has been of high importance for the video streaming in which the pate late join participants have the ability of viewing formerly delivered video. Furthermore, it has been indicated that the application could be determining the filtering-condition which is considered to be correlated to content which is associated with the samples of data,e.g., the temperature measurement has been not more than twenty degrees. With regard to such condition, DDS transfer just the samples of data, which comply with filtering conditions. Such filtering is of high importance to various scenarios of video transmission; for instance, with regard to browsing the web safely,

the attempt is using content-based filters for deleting unwanted frames. Other significant QoS has been reliability QoS, that has 2 major values best effort and reliable. With regard to the real time applications like transmission of videos, eligibility QoS has been fixed to best effort particularly in the condition of the real-time streaming of videos in which there-transmission considerably impacts the playback of the vide related to samples have been created regularly enough which it isn't required for resending or acknowledge any sample [2].

The organization of the article is given here. In section 2 the earlier researches about the clustering process and its drawbacks are identified. Section 3, proposed the method. Section 4,5 encompasses the performance analysis and subsequent discussions of the obtained findings. The article is ultimately ended in section 6.

2. Related Work

The presented section will be providing summarization regarding the past studies to enhance streaming of videos over wireless networks. A study by Detti et al. [1] provided a method with regard to the streaming H264 SVC video via middleware of Data Distributed Service. The structure which is related to DDS data unit developed has the ability of carrying H264 SVC video units [4]. Furthermore, receiver-driven rate-control approach has been developed which is the basis data unit of DDS, that used certain functionality of DDS. Lastly, they used and indicated that the efficiency of their approach in 802.11 wireless scenario, in comparison by the another solutions in their proposal. A study conducted by "Clavijo et al." has been suggested the implementation of CORBA middleware possible applicable for offering real-time video streaming [5]. Also, a study conducted by [6], "Kaff et al." provided CORBA- depend on platform for the purpose of responding to the evolving needs for resources in the video applications with the use of video streaming services. CORBA can be considered as one of the effective technologies which are introducing a lot of interfaces for majorly all types regarding the needed functionality of middleware; yet, it is considered to be a complicated system which provide implementation overheads, especially in the case when put to comparison with the other light weight technologies like ICE ("Internet Communications Engine") [7], certain real-time Java-based solution options [8], or DDS for real-time systems [2]. Thus, presented methods could be enhanced for facilitating real-time video transmission with the ensured quality of service. Furthermore, to use a new standard middleware provides efficiency for the transmission of videos in 2 manners. The first one has been compared to the implementation over network level, using middleware has more flexibility.

The second use middleware solutions offer QoS management for suitably initiating real-time as well as QoS-aware support with regard to the video transmission. A study conducted by Vora and Brown [9] examined the deployment of DDS for new 802.11n standard. The performance metrics have been jitter, delay, as well as throughput in the case when streaming of video has been brought in the network that carry just the data traffic. Furthermore, they estimated how many users are streaming videos of high rate, which could be supported over different network configurations. A study conducted by [10] analyzed as well as estimated the efficiency regarding the H264- based video streaming via multi-hop WLAN. Direction has been offered on the way of achieving optimum balance for certain scenario, that is considered to be of high importance in the case of using end-to-end services of video streaming through guaranteed Quality of Services. With regard to the WLAN, we have carried out former work for examining the data distributed Services across WLANs [11], yet, the video which has been applied has been extremely little motion one and codec bit-rate has been 128kbps that has been extremely less in comparison to that utilized in the presented study. Adjustment has been achieved for meeting limited bandwidth of the WLAN, also, results indicated that the used band-width has been fairly twice less in comparison to the band-width in the suggested study. A study conducted by Chen and Zakhor submitted a lot of TFRC connections as end-to-end rate control solution with regard to the wireless video streaming, by This study they proven that method could avoiding changes to infrastructure of network or the protocols of network, in addition cause total utilization with regard to wireless channel [12]. A study conducted via Stockhammer et al. suggested that separation between decoder buffer as well as the delay jitter buffer has been generally sub-optimal with regard to the video that is transmitted via the VBR channels [13]. They have defined minimal amount of initial delay as well as the minima needed buffer for certain video stream in addition to deterministic VBR channel.

A study conducted by Nasser [14], suggests QoS adaptive multi-media service models to control traffic in the multimedia wireless networks (MWNs) with regard to the cellular networks. The indicated system has been developed for benefiting from adaptive bandwidth allocation (ABA) algorithm with new calls for improving the usage of system as well as the blocking probability regarding the new calls. The results of simulation indicated that QoS adaptive multimedia service system would be outperforming current system with regard to new call blocking probability, bandwidth utilization, as well as handoff call dropping probability.

A study conducted via Li and Pan [15], examined WDS-depend on multi-hop wireless natural environment, denoted there is possibility for the multi-hop wireless networks to increasing coverage as well as sustaining enhanced the performance of the video streaming. As the study estimated the throughput related to the IEEE802.11 multi-hop wireless networks, they suggested an entire 2D model of the Markov-chain. The model took into account the retry bound as well as the post-back off step for effectively capture the efficiency regarding IEEE802.11 MAC protocols in the non- optimal

channels as well as with the non-persistent traffic. The analysis of the throughput has been validated through network simulation with the extended lower as well as the upper-layer modules of simulation. Achievable throughput provides upper bound related to the performance of video streaming that is additionally validated through the H264-based simulation of the video streaming with the efficiency measures of the application-layer (which will be offered in the following sections). The results are corresponding to indication they had on multi-hop test bed. Furthermore, a research that has been conducted by [16] is highlighting from starter of regarding ad hoc networks, it was indicated as one of the possible multiapplication technologies. This work is presenting comparative study that is related to the multi-casting regarding video as well as the video-like data with the use of 2 distinctive ad hoc routing protocols (PUMA and OLSR). Their NS-2 simulations are showing that the OLSR will be producing high throughput as well as low latency.

3. Video Streaming of Quality of Service's Architecture

With regard to the present section, review and discussion will be providing on QoS of the Data Distributed Services, which might be adjusted, for improving the video streaming as well as reducing the impact regarding network congestion.

3.1 Data Distributed Services QoS Polices for Video Streaming Support

Various policies of QoS have been utilized through DDS middleware for supporting smooth video transmission over the networks as well as minimizing the needed bandwidth; this is of high importance to many establishments, which are obliged to play for the usage of bandwidth. Proof of concept study from the University of Granada [20] has been conducted for proofing the adaptability regarding video streaming over data distributed service, the study indicated a few of the policies related to QoS which impact video streaming. With regard to this section, these policies will be studied and showing the way that they could be applied for supporting video streaming applications.

- (a) **Deadline and congestion control**, congestion of network congestion take place in the case when node or link has been overloaded and thus it will cause packet loss, more delay, and often blocking regarding the connections. Many studies were achieved to mitigate the congestion of network. With regard to the layer of the middleware, the policy of the deadline QoS could be applied for congestion detection and control, as can be seen in the Fig2. In the case when waiting time of subscriber for next packet will be exceeding specific predefined deadline, it is going to be sending notification to publisher that is going to start to minimize codec rate for avoiding congestion on subsequent streams. In the case of overcoming the congestion, previous status will be recovered.
- (b) **Time-Based Filtering** can be defined as minimal time of separation between two consecutive packets, which are received at subscriber's end. Such policy of QoS was applied in the video applications for reducing application load (receiving rate) as can be seen in the Fig3: Content-filtered topic. Subscriber's end. For example, assuming that the publisher is specified as server, also the subscribers are distinctive devices, which have distinctive abilities, for instance, cell phones, PDA, laptops, or sensors in the Wireless Sensor Network, all of those must be adapting to receiving rate depending on its provided resources with the use of this policy. It must be indicated that because of the deadline, which has been maximal waiting time with regard to data, update on the subscriber's end, time-based filter value should be not more than the value of the deadline.
- (c) **Life-span avoiding the delivery of stale data**, in which each one of the packets has its own data of expiration which will be determined on subscriber's end prior to playing it back. With regard to the video transmission, it could be applied for dropping stale received packets because the video application is just focused on the data that has short delay; such QoS has been extremely important on live video streaming for keeping consistent playback.
- (d) **Best effort and Presentation** are associated to one another, presentation QoS can be applied for asserting that the subscribers are going to be receiving the data in the order that it has been sent through publisher, in which the samples of video must be retrieved in similar order. With regard to best effort QoS, frames of video will be delivered with its useful in real-time transmission of videos in which the time has higher sensitivity in comparison to packet loss; such policy of QoS applies presentation QoS for asserting ordered packet delivery.
- (e) **Content-Filtered Topic** is a feature of high importance in the case when requiring filter data received through subscriber. Furthermore, it is going to help in controlling CPU usage and network on subscriber's side, because just the data, which is of high importance to subscriber, will be sent. With regard to the video transmission, such feature could be utilized for filtering received video like that each one of the subscribers is going to receive just the relevant data. Figure 3 shows behavior regarding such policy of QoS.

4. Simulation Environments

The experiment has been conducted with the use of software and hardware tools; monitoring as well as measurement tools in addition to the hardware platform specifications, which have been utilized, will be specified in the Tables 1 and 2.

4.2. Experimental Setup and measures of Performance

As can be seen in the Fig5, experiment test-bed included 3 computers (HP) which have been connected with the use of speed-touch hub with speed of (100Mbps); such computers have been offered with monitoring as well as measurement tools which have

The two approaches, VLC and DDS, have been studied through transmitting full motion video clip of 640 × 480 resolution, length of (72 seconds), in addition to 600 codec bit-rate at (25fps) for every one of them, utilizing H264 decoder. The video clip has been obtained from RTIDDS tool of video streaming which was utilized in this study’s experimental evaluation, with regard to the vehicle traffic which show high motion regarding the cars, which will make comparisons more precise.

QoS parameters have been modified for meeting the current network link’s specifications; for instance, the deadline has been fixed to infinite, life span has been also infinite, and reliability has been best effort. Such parameters have been appropriate for fast and dedicated networks like the Ethernet LAN due to the fact that they are reliable, fast, as well as congestion free. A computer will be representing publisher, others will be representing subscribers. In this experiment, the network will be examined with various numbers of subscribers (3, 6, 9, 12, 15); yet, the impact has been indefinite in visual frames; thus, this study applied background traffic (created via Jperf) for making comparisons regarding VLC and DDS extra visible. Because it has been extremely complex to study the scalability of technology via increasing the number of clients or subscribers, this study applied Jperf for generating the background traffic for making this experiment more applicable. Background traffic has been 75% regarding provided bandwidth that is approximately 98Mbps.

Table 1: description (tools) with programs

	Ubuntu version	Description	Using	Publisher
1	14.0-.0.6	Vlc player	for Video Streaming	Intel(R)core(TM)15.2 40 GHZ
2	14.04-4.5	Rtt dos	for Video Streaming	1.18 GB
3	14.04-.2.7	Rtt analyser	Measurebw, PKT loss ,Jitter	Ubuntu Release14.04 LTS
4	14.00-.0.2	Ireperff	generate background traffic	Ethernet 100 Mbps
5	14.04-4.5	Wir--shark	measurebW,PKTloss,Jitter qoS monitoring and network debugging	Ethernet100 Mbps

(Estimated through wire-shark). Such percentage regarding the background traffic has been defined following conducting experiment still observing the impact on quality of video.

The bandwidth that is consumed has been metric of high importance for evaluating the performance because the consumers must pay for their bandwidth; in addition to that, decreasing the utilized bandwidth will increase the efficiency of network with regard to packet loss, jitter, as well as delay. Therefore, this performance metrics focusing on bandwidth, also this study examined packet loss, as well as the jitter (Variation in the Packet Delay). Along with such objective measurements, this study added subjective measurement [27] and that is going to make it simpler for the evaluation of human eye regarding screenshots throughout simulations.

5. Results and Analyses

The results have been acquired following repeating experiments many times and after that averaging out. Fig6 will show the impact regarding background traffic on the video traffic from VLC and DDS. The frames were obtained throughout playback at subscriber's end in 3 cases, with 3, 9, and 15 subscribers. With regard to the cases in which there has been some distortion in frames, this work chose the frames in which damage has been visible. This study will examine the impact regarding the background traffic from 25% and 50%, yet not impact has been visible, after that adjusting it to 75% and the impact will be appearing from the case with nine subscribers in the VLC and from case with fifteen subscribers in DDS setup. Generally, the figure 5,6 will show that DDS is out performing VLC, in which the case of fifteen clients in the VLC, the system has been unstable, also the image has been extremely choppy, while DDS, the picture has been intermittently with regard to the case of fifteen subscribers, and it has been a little bit choppy. This will be indicating the scalability as well as the efficiency regarding DDS video streaming over the VLC.

With regard to Fig7, consumed bandwidth has been specified as a measure to compare performances, which is estimated with no addition of any background traffic. From such figure, the consumed bandwidth has been majorly similar for same technology with background traffic as well as without it, because video traffic has been comparable in the two conditions. The little increment in the VLC has been because of the increment in the control packets for mitigate overloaded network. Naturally, many subscribers result in extra consumption of bandwidth; yet it has been indicated that VLC will increase its rate at high rate in comparison to DDS in which the slope related to line has been less and have higher stability (linear).

The figure indicating that the DDS consume narrower band-width in comparison to VLC and the difference has been evident with more subscribers, in which it has been about (2Mbps) in the case of three subscribers and it is going to reach approximately (5Mbps) in case of 15 subscribers.



Figure 4. A traffic Visual.

Figure 4: A traffic Visual Platform specifications.

		Publisher	Subscribe A	Subscribe B
1	cpu	Intel(R)core(TM)15.2 40 GHZ	Intel(R)core(TM)15.2 40 GHZ	Intel(R) core(TM)15.2 40 GHZ
2	Memory	1.18 GB	1.18 GB	1.18 GB
3	o.s	Ubuntu Release14.04 LTS	UbuntuRelease14.04 LTS	Ubuntu Release14.04 LTS
4	N/kconnecti on	Ethernet100 Mbps	Ethernet100 Mbps	Ethernet100 Mbps

Table 3: Consumption via streams using dds,vlc(BW)

	no.sub	Without bg raffic dds VLC		With BG traffic		
		dds	vlc	dds	vlc	
1	13	1.05	2.80	1	1.05	2.6
2	16	3.00	4.04	2	3.07	4.6
3	19	4.40	7.00	3	5.01	7.2
4	22	5.06	10.08	4	6.04	10.7
5	25	7.01	1 2.05	5	7.01	12

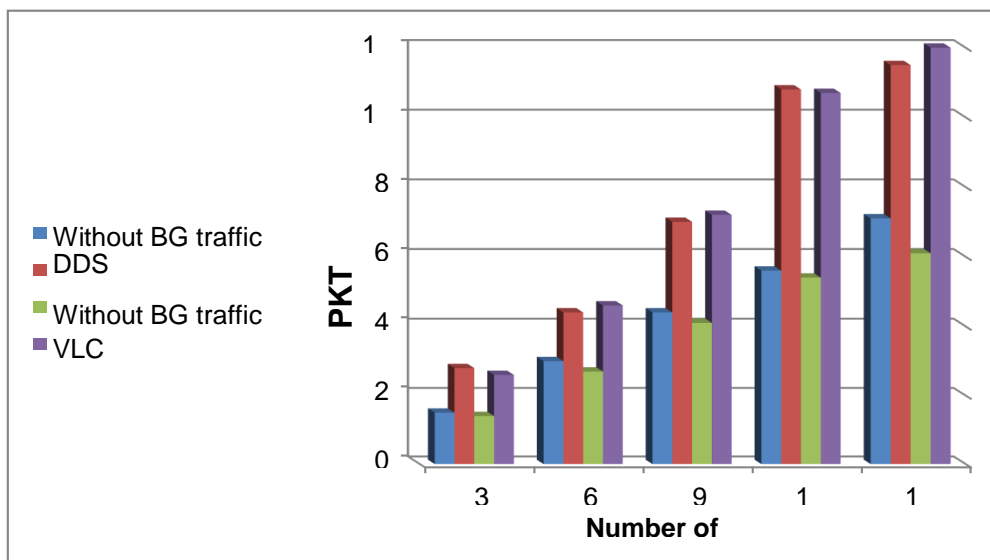


Figure 5. A traffic of utilized bandwidth not utilized

Table 3 displays the percentage of the bandwidth that is utilized for the two technologies.

Dissimilar to the Fig7,8 will show which data distributed services, VLC had comparable number regarding the dropped packets without and with background traffic. This is because the packet dropping related to the DDS in case of no background traffic has been extremely distinctive in comparison to when the background traffic exists, while for bandwidth, background traffic had considerably impact.

When there is no background traffic, the two Approaches had good working. As might be shown in figure, worst-case result has been with 15 subscribers as well as 4,000 VLC packets, that specify not more than 3% regarding total sent packets sent, therefore cancelling out the impact regarding background traffic.

The effect of packet loss has been verified with other cases with the background traffic, in which it has been extremely visible particularly in the case regarding VLC, which the frames have been extremely choppy, also, the color has been variable, with high failure that is related to specific clients throughout the process of video streaming.

Fig 9 displays jitter, which is, the variation in the packet delay, without and with background traffic for VLC and DDS.

It has been indicated that DDS outperforming VLC,in which the dissimilarity is approximately (40ms).Stream has been majorly impacted through packet loss factor, due to the fact that jitter has been not impacted through such loss, while, with regard to delay more than 100ms, jitter impact was proved.

With regard to the Figure 10, content-based filter QoS will be examined; a scenario will be used to track location of object through publisher as well as sending coordinate to subscribers that will show interest in certain region. Each one of the subscribers have the ability of specifying in his contract subarea of interest for avoiding bothering itself with data that is irrelevant. As shown in the figure, filter size regarding y axis is in range of 25 to 100%. Filter size will show area of percentage which has been covered through certain publisher.

Since the size of filter will narrow, throughput at the side of subscriber will be decreasing nonlinearly (due to the object movement randomization). Thus, figure will show that in the case of 25%, throughput has been majorly halves like in case of 100%.Similarly, the time-based filter QoS could be applied for controlling receiving rate regarding published data, for instance, for avoiding overwhelming limited resource devices at the side of subscriber.

Fig 11 will be examining two major parameters of QoS utilized in the DDS; the two are specified at transport layer through User Datagram Protocol and TCP protocols. Yet,due to the fact that DDS applies UDP in transport layer, it will be supporting reliable transmissions through add of best effort and reliable QoS to application layer (layer of the middleware). Best effort and reliable QoS have been studied with the use of data readings (non-heavy traffic) as seen in Fig11.

The consumed bandwidth will be low in terms of video traffic. As shown in figure, reliable scenario applies additional bandwidth with the increase in the number of subscribers. Comparable to the TCP, DDS will apply acknowledgment packets for assuring the reliability across the UDP, intuitively, such addition packets will be increased with the increase in number of subscribers.

With regard to the Fig 12, data reading traffic will be compared and the video camera traffic, which will be derived in doors, and therefore extremely low traffic (surveillance without movement) has been indicated.

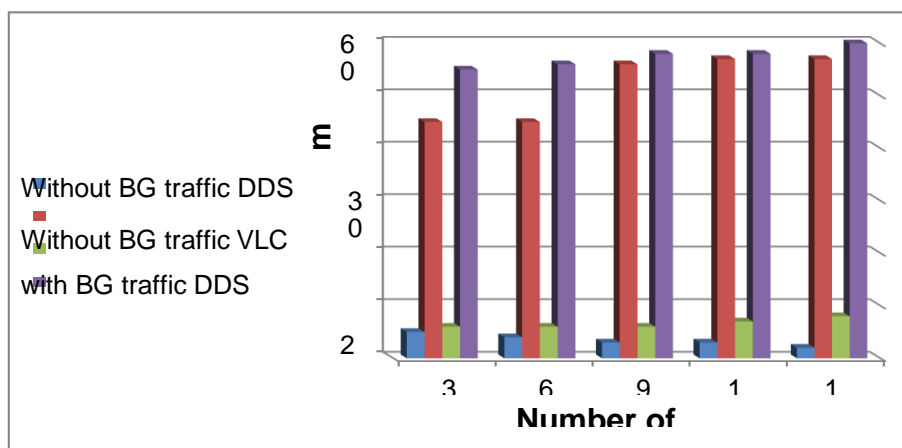


Figure 6. without background traffic

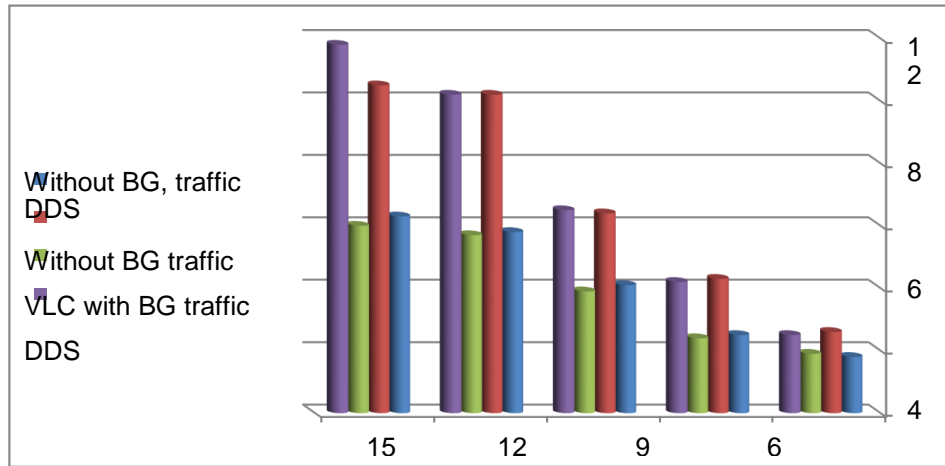


Figure 7. Jitter with& without

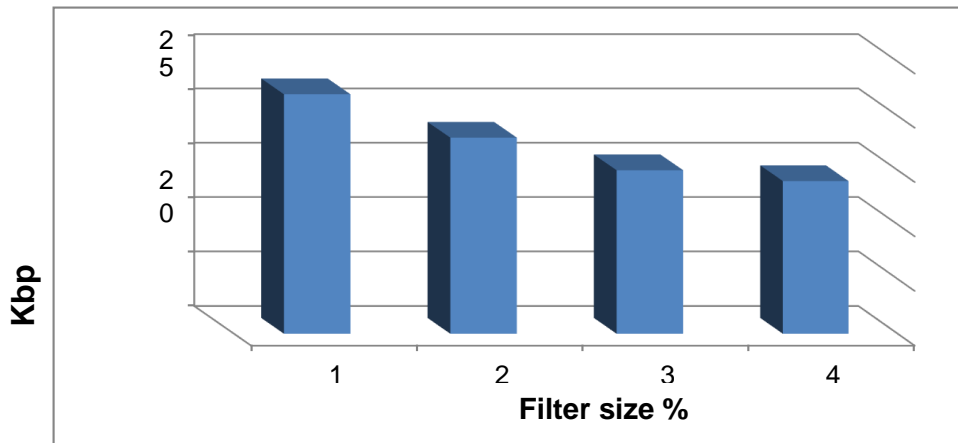


Figure 8. Effective size in content-based filter

Thus, this study will be examining DDS middleware with 3 traffic types, data readings, low traffic video surveillance, as well as high-level traffic video streaming. With regard to the video camera traffic, throughput will be about 1.8Mbps in case of ten subscribers that make it appropriate as inexpensive selection for video surveillance applications. Furthermore, Fig 13 show the effect of interference on the performance of distributed data service (into WLAN), it indicates that the consumed bandwidth will be increase because of control packets utilized to mitigate mitigating packet dropping as well as congestions, reaching 4Mbps in situation of ten subscribers.

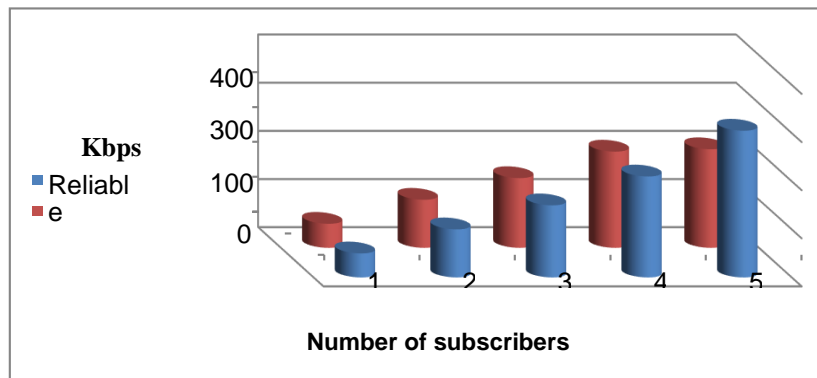


Figure 9. Best effort quality of services according to the terms of bandwidth supply

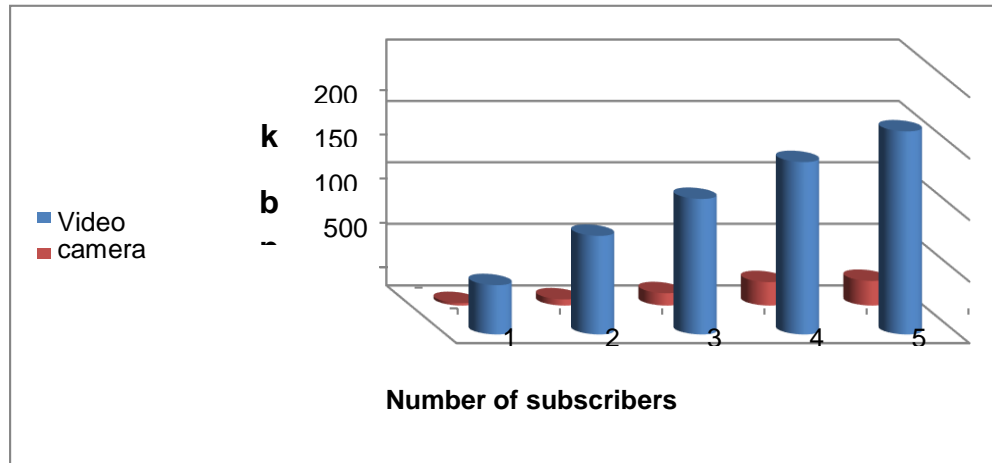


Figure 10. A traffic data in reading background (video).

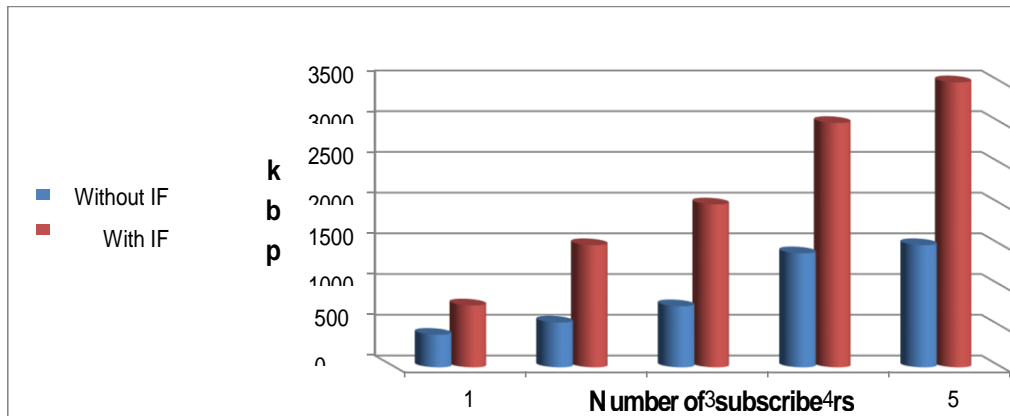


Figure 11. Interference traffic effective onto stream over data distributed service.

6. Conclusion

The presented study provides performance evaluation with regard to video transmission over LAN with the use of DDS. This is considered as the first work to study the real impact of the video distribution with the use of DDS on Jitter and bandwidth of network, whereas putting it to comparison with VLC video streaming player. The results of the work indicated that this is a technology of high importance to distribute video over the networks, due to the fact that it is consuming low bandwidth, it has low jitter, as well as resulting in less packet loss. In addition, it is providing extra control on the video streaming via utilizing rich set regarding the policies of QoS, which have been offered through DDS middleware. Data Distributes Services has been developed for general distributed systems; yet, this study specified just one publisher and fifteen subscribers, while in the real-life distributed applications, such number has been small. Such limitation has been due to the limitations in simulators of DDS and not much machine used in the study. Furthermore, studying the implementation of DDS over indoor dedicated WLAN make the application simple due to the fact there are no mechanisms have been created for adapting video streaming to time-differing band-width regarding error- prone wireless channel. Therefore, such applications do not have enough approaches that leverage DDS QoS support for adaptive streaming video frames depending on provided time-varying network bandwidth. Essentially, Data Distributed Services- based solution, yet, it remains applicable because it is compared to the VLC tool of video streaming that is applicable in the present market is a practical and well-known player in current market. With regard to the future works, the main aim is studying more networks like Bluetooth personal area networks, as well as examining the parameters of Quality of Services parameters to reach the optimum configurations conditions. The parameters of QoS might be utilized for solving perennial network problems like congestion of the network, which is considered as suitable and more efficient.

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