ABSTRACT
Aplication Development of Information Media Pengajian with Live Streaming Services Android-based (Case Study Muslim Pride)

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ABSTRACT

Muslim Pride one of the organizations that are active in the field of dakwah. The organization is currently helping dakwah activity at Al-Murabbi. Dakwah activity at Al-Murabbi has been running long enough to be effective only just recently in mid 2016. In spreading information are still using SMS technology is the result often suffer pending and also the schedule were deemed not fit, it makes jamaah difficult to reach the places. Therefore, there is no information media which can massively spread the information for jamaah who cannot attend the event.

Based on the issues then made an application development of information media pengajian with live streaming services android-based. Then with information media, jamaah can find out information about kajian at Al-Murabbi. The development of information media consist of schedule of kajian, live streaming services and VOD.

Based on the research can be conluded that it takes bandwidth at least at speeds of 512 kbps to do live streaming. Then with the existing of this application, jamaah can watch kajian wherever they are.

Keywords : Al-Murabbi, Live Streaming, Multimedia, Muslim Pride, Pengajian

1. *PRELIMINARY*

Da'wah is a duty of every Muslim to spread kindness and calls upon the truth based on the Quran and the Sunnah. The realization is not just a propaganda effort to increase understanding of the behavior and outlook on life, but also to the broader target. Moreover, at the present time, he should be a role towards the implementation of Islamic teachings more fully in various aspects. Currently proselytizing activities in the city of Bandung more incentive to do even every mosque has always held recitals each week. This is all done to create inner peace, teaches Muslims to always bring God into every action and step life. Muslim Pride one of the organizations that are active in the field of propaganda. They aim to develop methods of propaganda that exists today to keep up with technology. The organization is currently being helped proselytizing mosque Al-Murabbi. Proselytizing at Al-Murabbi has been running long enough to be effective only just recently in mid 2016. The study in this mosque thematic, which is enough to attract many people to attend studies at the mosque. Within a week of the study carried out two times, on Tuesdays and Saturdays.

Although already running quite effective, nonetheless there are problems that arise in its implementation. Based on interviews with Kustiana kang, chairman of youth organization Al-Murabbi mosques and Muslim media coordinator Pride also claimed that many pilgrims who complained timing of the study were deemed not quite fit with their activities (study starts at 18:00). Moreover, Al-Murabbi location itself is in an area prone to a standstill. Though many pilgrims who are interested in the concept study at Al-murabbi. In the study of information dissemination is still using SMS technology is the result often suffer pending. Given these problems, the researchers will create a new system that is media information with live streaming video services. The system is based on the results of a questionnaire that has been deployed to the Al-Murabbi pilgrims. In the questionnaire showed that the 91.33% strongly agree that Al-Murabbi require live media information and 90% strongly agreed that the streaming video service will help pilgrims who could not attend.

Media information is a tool to collect and reconstruct an update so that it becomes a useful material for the recipient information. With the media information pilgrims can find out any information existing studies at Al-murabbi. Media contains information that built the study schedule, VOD and live streaming video based on Android.

In this case the need for a solution to solve the existing problems in the mosque Al-Murabbi

Bandung. Therefore, referring to the above problems, the researcher will be the theme thesis entitled "Application Development Media Information pengajians With Live Streaming Services Based Android (Muslim Pride Case Study)".

2. *CONTENT OF RESEARCH*

2.1 *Problem Identification*

Based on the background contained in the Introduction then obtained the problem is as follows:

1. There are limitations of distance and time to the congregation Al-Murabbi making it difficult to follow studies at Al-Murabbi.

2. Lack of information media at Al-Murabbi that can spread massively assessment information that can benefit the congregation Al Murabbi wherever they are.

At number one mentioned the limitations of distance and time on Al-Murabbi pilgrims. Distance limitation in question is a fairly remote location plus more are on the roads often congested so late to attend study or even not at all. Limitations of time in question is every pilgrim has the same activity with the activities of study each week so could not attend the assessment.

At number two explanations is currently at Al-Murabbi not yet have that information media can disseminate information massive. The information in question is a widespread information about the content studies are held. Such information is a lecture there. To listen to a lecture, the pilgrims have to always go to the mosque Al-Murabbi. But if you see a problem on the first point it is possible that the pilgrims of the hindrance to always go to the mosque Al-Murabbi. It could be said that in the mosque Al-murabbi itself has not had the media information that could make the pilgrims enjoy lectures wherever they are.

2.2 *Goal of Research*

The purpose of this study was to establish a media information recitals with android-based live streaming service. The goals of this study are as follows:

1. *Make it easy for pilgrims to witness assessment wherever they are.*
2. *Provide information media teaching facilities in the form of live streaming services.*

2.3 *Scope Of Problem*

The limit area of research in this study are as follows:

1. *The study was conducted only in the mosque Al-Murabbi.*
2. *Users are particularly Al-Murabbi pilgrims and the general public.*

2.4 *Research Methods*

The research methodology is a set of rules, activities, and procedures used by the perpetrators of a discipline. The methodology is also a theoretical analysis about a way or method. Research is a systematic investigation to increase the amount of knowledge, is also a systematic and organized effort to investigate certain issues that need answers. The essence of the research can be understood by studying the various aspects that encourage researchers to conduct research. The stage of peneliatan as in picture 1 :



Picture 1. *Research Methods*

2.5 Dakwah

Propagation etymologically derived from the Arabic word meaning Calls, Call, or Call. Exclamation used in Da'wah aims to encourage someone to do something good in the activities or in changing the patterns and habits of life. From the word cry, Dawa has many meanings that can be used widely not only in religion, where the word is often used Da'wah but given call can be interpreted in terms of positive and negative. The use of the word Da'wah refer solicitation, or call delivered to the person to turn towards the more the better.

Propagation the origin of the word comes from Arabic and also carried by the Arabs make Da'wah word itself has undergone a shift in meaning. A shift in meaning Propagation be tapered only on appeal carried out by someone in the teachings of Islam.

In the sense Terminologies are more likely to be interpreted as an attempt by a preacher to return to the right path. In this discussion the plaintiff refers to one preacher or speaker expressed Da'wah. The use of the word propaganda only refer to the invitation conveyed by the speaker of the Islamic religion because Arabic origin that are closely linked as the origin and the place of Islam evolved. From the opinions of Experts, like Salahuddin Sanusi, East Djaelani, Thoha Yahya Omar, Hasymi and Abdul Karim just saying the word Da'wah in the editorial different but the intended meaning is a call

in the form of delivery of a ban as well as the command of God in religion avoid any action that could generate Sin. In a study dawkah in this case, Propagation can also be used in conveying the threat posed when someone does not do something good in the eyes of religion.

In Book Dustur Da'wah, A. Hasmy explain the notion of propaganda by the Qur'an as a rallying cry that brought someone to believe and practice aqidah and enforce Islamic Sharia. The call is in the form of oral and deeds as for the methods used can be various kinds. Sheikh Ali Mahfud explained that Da'wah is a process of giving motivation to the object of propaganda in terms of human beings to do good in accordance with the instructions. The call in the identical propaganda by doing good and preventing rather than kemungkaran. The purpose of this implementation to achieve happiness in this world and the Hereafter.

2.6 *Information Media*

The word comes from the Latin media medius, which literally means "Middle", "intermediaries", or "Introduction". In Arabic "Media" is an intermediary or an introductory message from the sender to the receiver. Gerlach & Ely stated that "if the media is understood broadly human, material, or events, which establish the conditions that make humans able to acquire the knowledge, skills or attitudes". Gordon B. Davis, argued that the information is data that has been processed or processed into a form that is meaningful to the recipient and is of real value or understand the actions or decisions that are now or later.

Media information can be summed up as a tool to collect and reconstitute an update so that it becomes a useful material for the recipient of the information, while the explanation Sobur (2006) information media are tools of graphic, photographic or electronic to capture, process, and reconstitute the visual information.

2.7 *Live Streaming*

Live Streaming is a process of continuous data transmission over the Internet is very useful for anyone who needs information in the form of streaming video. Video streaming is the process of sending audio or video file directly to the client from the server. [2]

2.8 *QoS Parameter*

Quality of Service (QoS) is defined as a measure of how well the network and is an attempt to define the characteristics and properties of a service [15]. In IP-based networks, IP QoS refers to the performance of the -Package IP packets passing through one or more networks. QoS is designed to help end users become more productive by ensuring that end users get reliable performance of network-based aplikasiaplikasi. QoS refers to the ability of a network to provide better service at a specific network traffic through different technologies. The parameters of the performance of the IP network are:

1. *Delay, defined as the total time delay of a package caused by the transmission from one point to another is intended. Delay in the network can be classified as follows delay processing, packetization delay, serialization delay, delay jitter buffer and network delay. Formulas to Calculate Delay average is :*

Delay Rata-rata = Total Delay / Total Packet yang diterima

***Table 1**. Delay TIPHON Standard Parameter*

Kategori Delay	*Besar Delay*
Sangat Bagus	*< 9 ms*
Bagus	*9 s/d 50 ms*
Sedang	*50 s/d 450 ms*
Jelek	*>450ms*

2. *Jitter, defined as a variation of delay or packet arrival time variation. Many things can cause jitter, such as traffic increases suddenly, causing narrowing of the bandwidth and cause queues. Moreover, the speed receive and send packets of each node can also cause jitter. Calculating formula Jitter is :*

Jitter = Total Variasi Delay/ (Total Paket – 1)

***Table 2**. Jitter TIPHON Standard Parameter*

Kategori Delay	*Besar Jitter*
Sangat Bagus	*0 ms*
Bagus	*0 s/d 75 ms*
Sedang	*76 s/d 125 ms*
Jelek	*125 s/d 225 ms*

3. *Packet loss, is a parameter that indicates the total number of packets lost, may occur due to collisions and congestion on the network and it affects all applications for retransmission will reduce overall network efficiency despite sufficient amount of bandwidth available for these applications. Generally, the network device has a buffer to store data received. If congestion is long enough, the buffer will be full, and the new*

data will not be accepted. Packet Loss Calculating formula is

$$\text{Packet Loss} = \frac{\text{Paket data yang dikirim} - \text{Paket data yang diterima}}{\text{Paket data yang dikirim}} * 100\ \%$$

***Table 3**. Packet Loss TIPHON Standard Parameter*

Kategori Delay	*Besar Jitter*
Sangat Bagus	*0 %*
Bagus	*3 %*
Sedang	15 %
Jelek	25 %

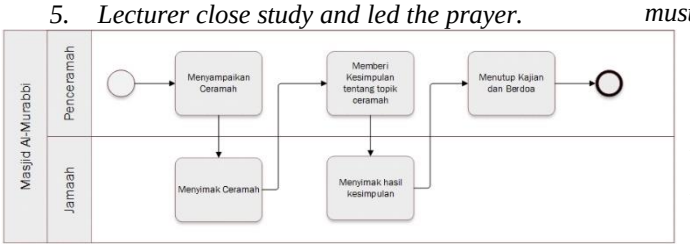
4. *Throughput, ie the speed (rate) effective data transfer, measured in bps. Throughput is the total number of successful packet arrival observed at destination during a specified time interval divided by the duration of this time interval. Calculating Throughput formula is*

Troughput = paket data / lama pengamatan

2.9 *Current System Analysis*

In the implementation of the study are business processes that are running the study is when the activities take place. The study activities can be seen in picture 1 and the process of assessment event at Masjid Al-Murabbi include:

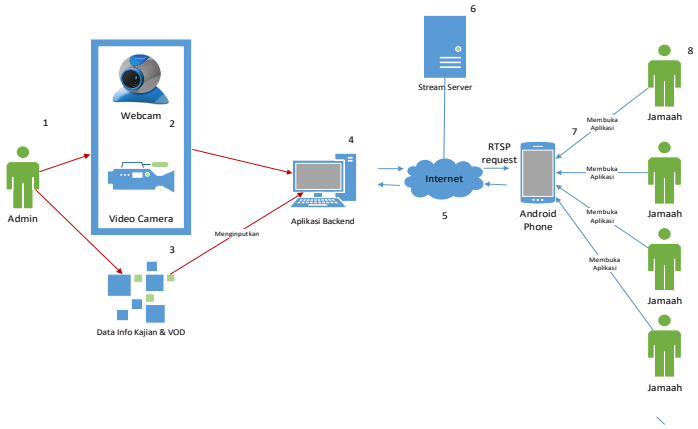
1. *Lecturer delivered the sermon.*
2. *Jamaah listening to lectures delivered lecturers.*
3. *Lecturer giving the conclusion of the subject matter.*
4. *Jamaah listening the conclusions of the subject matter.*
5. *Lecturer close study and led the prayer.*



Picture 2. *Da'wah Activities*

2.10 *Application Development Analysis*

In solving this problem, it designed an application with live video streaming services based on Android. This application comprises two parts, the backend and frontend section. The system was built in general can be found at picture 3.



Picture 3. *System Development*

Picture 2 shows each stage that exist in the broadcasting system. These stages can be broken into several points, among others:

1. *Admin is a user of the backend.*
2. *Webcam / video camera is a tool to record objects.*
3. *The information studies and data from VOD.*
4. *Application Backend include information systems and application streaming.*
5. *Internet as a liaison between the backend application with the front end where there is some exchange of data through the RTSP protocol.*
6. *Stream servers on duty to perform streaming transmission to the client.*
7. *Android Phone is a client device.*
8. *Jamaah the side of the front end.*

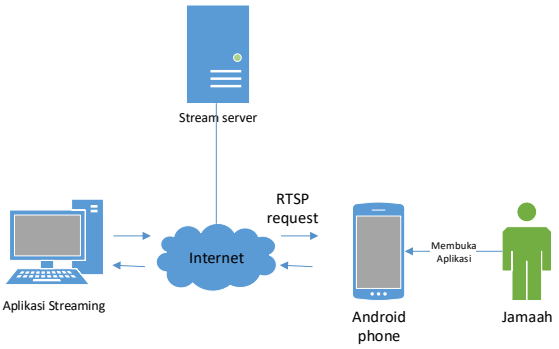
2.11 *Live Streaming Analysis*

Video streaming is the transmission of video data over a computer network that play directly online. In principle, there are several processes that must be carried out as in picture 4.



Picture 4. *Capture Process*

The recording process performed by the existing system in streaming application. Streaming application will identify the mic and camera. If the camera and mic are not identified it will exit the message is not their camera and mic. Having identified the mic and camera streaming can begin. Then there is an option to record which can record live streaming of activities undertaken in the end the tape was stored on the database file.



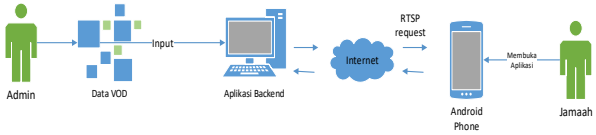
Picture 5. *Compression and Transmission*

The compression process will be carried out simultaneously with the process stream. This process is performed by the stream server. Stream server used to run video or audio files in realtime. The protocol used for communication between the backend and frontend is RTSP.

If the streaming process on the server is done properly then the output of the streaming is done on the server will appear to the client in android application. The streaming video will be displayed on the video container that has been provided.

2.12 *VOD Analysis*

VOD is the live streaming videos that have been recorded and stored in a file. Video will be fed by the admin to the existing database in the system. When a client wants to play the VOD, the client of the application did request a metafile that is in the existing database in the backend application. Metafile is a collection of information that contains the video layout and types of video. The system will send video if the video is in storage and began to send them.



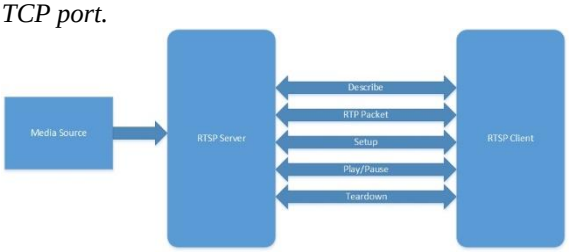
Picture 6. *VOD Process*

Metafile submissions will be accepted android client application, and then forwarded to the video container. Video Container will use the metafile information such as the location of the video file to access the video file that is in the system. The system responds by sending metafile that contains metadata information video to be played.

2.13 *Protocol Analysis*

Real Time Streaming Protocol (RTSP) is a network control protocol that is designed for use in entertainment and communication systems to control the streaming media server. This protocol is used to establish and control media sessions between end points. Such as play and pause, to facilitate real-time control of playback media files from a server or directly from media sources such as a camera or microphone.

Transmission of data stream itself is not the task of the RTSP protocol. RTSP servers use the Real-time Transport Protocol (RTP) in conjunction with Real-time Control Protocol (RTCP) for streaming media delivery. RTP takes care of sending real-time video and audio data on either UDP or TCP port.



Picture 7. *RTSP Role*

When the RTSP protocol is used then the protocol will call those methods in running the process. Each method interrelated and must be met to be able to watch the video. Those methods are as follows along with an explanation.

1. *Describe*

   Client request for information from the media object using describe request. The server responds with the requested resource description. such a description may be represented by the Session Description Protocol. SDP description contains, among other things, the available data, the encoding format media streams, and others.

2. *Setup*

   When the client sends a request to the server setup, created a new RTSP session. Session id returned by the server during setup request from the first data will be used to request setup. In this way, the server creates subsession RTSP for any requested data.

3. *Play / Pause*

   The client sends a play request to the server to start sending data via the mechanism specified in the setup request. Client can also pause at this session. Video playback is suspended. Play request can be sent to resume playback.

4. *Teardown*

   With teardown request from the client, the server stops sending data stream provided to URI, and decides source related data.

2.14 *Result of Delay Testing*

Using 5 Users to determine the average delay in the stream.

a. Testing Delay on bandwidth 256 Kbps. From the data capture wireshark then obtained average delay by means of calculation:

Delay Rata-rata = 44.470 s / 601
*= 0.0739 * 1000*
= 74 ms

b. Testing Delay at 512 Kbps bandwidth From the data capture wireshark then obtained an average delay by means of calculation:

Rata-rata Delay = 38.347s / 1127
*= 0.034 * 1000*
= 34 ms

c. Testing Delay at 1024 Kbps bandwidth From the data capture wireshark then obtained an average delay by means of calculation:

Rata-rata Delay = 42.049 s / 2018
*= 0.0208 * 1000*
= 20.8 ms

From the tests, it can be concluded delay in the bandwidth of 256 Kb / s get a score of 74 ms which includes categories ugly, delay in the bandwidth of 512 Kb / s to get the value of 34 ms which includes categories ugly, delay in the bandwidth of 1024 Kb / s to get the value of 20.8 ms which included good category.

2.15 Result of Jitter Testing

Using 5 Users to determine jitter in streaming.

a. Testing jitter bandwidth of 256 Kb / s From the data capture wireshark then obtained by means of calculation of jitter:

Jitter = 52.5199 s / 601
= 0.0873 1000*
= 87.3 ms

b. Testing jitter bandwidth of 512 Kb / s From the data capture wireshark then obtained by means of calculation of jitter:

Jitter = 48.14304 s / 1127
*= 0.0427 * 1000*
= 42.71 ms

c. Testing jitter bandwidth of 1024 Kb / s From the data capture wireshark then obtained by means of calculation of jitter:

Jitter = 51.56246 s / 2018
*= 0.0255 * 1000*
= 25.55 ms

From the tests, it can be concluded jitter in the bandwidth of 256 Kb / s to get the value of 87.3 ms are medium category, jitter in the bandwidth of 512 Kb / s to get the value of 42.71 ms which includes categories ugly, jitter in the bandwidth of 1024 Kb / s to get the value of 25.55 ms which included good category.

2.16 Result of Packet Loss Testing

Using 5 Users to determine the Packet Loss in a stream.

a. Testing Packet Loss bandwidth of 256 kbps From the data capture wireshark packet loss are obtained by means of calculation:

$$\text{Packet Loss} = \frac{601-439}{601} * 100\%$$
$$= 27\ \%$$

b. Testing Packet Loss bandwidth of 512 kbps From the data capture wireshark packet loss are obtained by means of calculation:

$$\text{Packet Loss} = \frac{1127-803}{1127} * 100\%$$
$$= 28.7\ \%$$

c. Testing Packet Loss bandwidth of 1024 kbps From the data capture wireshark packet loss are obtained by means of calculation:

$$\text{Packet Loss} = \frac{2018-1349}{2018} * 100\%$$
$$= 33\ \%$$

2.17 Result of Throughput Testing

Using 5 Users to determine Throughput in the stream.

a. Testing throughput bandwidth of 256 Kbps From the data capture wireshark the throughput obtained by means of calculation:

Troughput = 235622 s / 44.470
= 5298.45 bps

b. Testing throughput bandwidth of 512 Kbps From the data capture wireshark the throughput obtained by means of calculation:

Troughput = 473804 s / 38.347
= 12355.69 bps

c. Testing throughput bandwidth of 1024 Kbps From the data capture wireshark the throughput obtained by means of calculation:

Troughput = 955614 s / 42.049
= 22726.200 bps

2.17 Result of Stressing Testing

Stressing is testing conducted to determine the ability of the software to handle abnormal conditions (including quantity / volume).

Table 4. Result Stressing Testing

Bandwidth	Jumlah User	Parameter		Status
		Delay	Jitter	
256 kbps	5	74 ms	87 ms	Sedang
512 kbps	5	34 ms	42.71 ms	Bagus
1024 kbps	5	20.8 ms	25.55 ms	Bagus

3. *PENUTUP*

3.1 Conclusion

Based on the results obtained in this study as well adapted to its purpose, it could be concluded as follows:

1. Functionally already functioning as expected then this application should have a minimum of 512 Kbps of bandwidth in order to get better performance.

2. Based on interviews and questionnaires it can be concluded that these findings are consistent purpose.

3.2 Suggestion

Applications Media This information can still be developed in line with the development of system requirements specifications that must be met in achieving a higher stage for better system performance. Here are some suggestions for development that can be done:

1. The studies should be done with a computer server with a higher specification than that used today and also quite a large bandwidth.

2. Adding interactive features such as live chat.

WORD OF GRATITUDE

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